

# COAL AGE

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## An Appeal to Reason

By R. DAWSON HALL



Perhaps no time in the history of the United States has good fortune been so bright as in the opening days of 1920. Everybody is busy except the copper miners and farmers, and most people have received increases fully meeting the increased cost of living. The exceptions are wholly in the salaried classes and those whose incomes are based on bonds, preferred stock insurance, compensation and mortgages, which have not increased with increasing living costs.

At no Christmas season have expenditures been greater than in that which is just past. Never have there been fewer persons in need of pecuniary assistance. The bread lines no longer exist. Where at the Bowery Mission there was usually a long and doleful procession—of inebriates be it noted—the line has dwindled till on one night recently there was but one hapless man asking for shelter and a free meal.

Much of our unrest is not the outcome of need, but of desire and of a sense of irresponsibility fostered by good times and by the assurance that a living can be secured whether the individual works and saves or idles much of the time and saves not at all.

When the road is good beneath and the highway ahead is clear, the automobilist is disposed to "joy ride"; the effect of prosperity on the working man is quite similar. His strikes are "joy rides", born of the certainty that comes from national prosperity. Sure of his job, or of another job as good, he wagers his present opportunity for another that is better.

The recent strike of the mine workers was a protest against the conditions existing when business lagged in the early spring. He could not strike then. His margin was too low; the future was too uncertain. But with certainty ahead of him and with a comfortable present, he struck, feeling that he was secure against any immediate want.

No one is disposed to deny the right of labor to profiteer—to accept a better paying job when it presents itself in his line of work or in another. The mine worker who becomes a national baseball figure and who commands a salary in the tens of thousands of dollars is not condemned but applauded. If Charlie Chaplin and Mary Pickford are offered a million dollars a year apiece, no one condemns them for accepting that splendid remuneration.

But this, the nation does expect, that when labor demands an increased return and enforces that demand by a strike in which all, or most of, the employees in an industry take part, it must show a new disability to earn its former living—an increased cost of living, for instance—or a new merit or ability entitling it to more pay and show itself absolutely free of the charge of violating an express contract.

If the mine workers had sought merely a 14 per cent increase or a sliding scale proportionate to the increased cost of living and had waited to make that demand until relieved, in the short process of time, of the obligation of their contract, nothing could have been said. But more than that should have been sought, if sought at all, by other methods than by a combination jeopardizing the life and comfort of the other 110 millions of their fellow citizens.

Large increases of wage should come out of the operation of supply and demand. They must not be sought by a certain class of people refusing in block to afford a service to others that they have been in the habit of rendering. Our civilization is based on certain men assuming a specialized part of the necessary labors of mankind, leaving the rest of the work to others.

The cast of the play of life must not be spoiled by the unreasonable sulkiness and abstention of any of the players. This is the rule of reason to which the public must appeal.

# A Use-Classification of Coal\*

Present classifications of coal do not take into consideration the use to which the fuel may be put or its adaptability to any industrial or domestic process. It is the aim of Mr. Ashley's article to present a nucleus which, expanded through research and discussion, may eventually be of vastly greater practical value to producers and consumers of coal than any classification yet employed.

BY GEORGE H. ASHLEY†

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THE present critical state of the supply, distribution and utilization of coal calls renewed attention to the lack of any fully adequate classification for this fuel. In the past coals have been classified as anthracite, semi-anthracite, semi-bituminous, bituminous, sub-bituminous and lignite, together with a few special types, such as splint and cannel coal. But under the term bituminous are included a great variety of coals differing markedly both physically and chemically. The term sub-bituminous coal covers an equally great range of chemical differences.

In order to distinguish these varieties of bituminous coals it has been customary to designate them by the names of the places where they were mined, or by the name of the bed from which a particular variety is produced. Thus, in the market reports, coals are quoted as Pocahontas, New River or Sewell coal, Moshannon coal, Ohio coal, Williamson County coal, Jellico coal, and so on indefinitely, no limit being set as to the boundaries of the area to which a given name is applied.

Nor is there any scale by which the coal from one place may be compared with that from some other district or some other bed. On the one hand, coals from the same district may be quite distinct and sell at very different prices, or coal from the same bed may vary widely in different districts; on the other hand, coals from different states may be so similar physically and chemically that one could replace the other in practical use without any appreciable difference in service.

The following classification, arrived at after a careful review of a large number of systems of classification and of all of the recognized characteristics of coal, brings together all varieties that so nearly resemble each other physically, chemically and in heating qualities that any coal of a given type could replace any other coal of the same type and grade in use. Thus, if coals A and B are classed as of the same type and grade they have, so far as I know, approximately the same heating value when burned under the same conditions, as well as the same character, length of flame and properties affecting transportation and stocking; and if the same grade, approximately the same percentage of impurities.

The classification proposed is intended primarily to be practical, that is of use to the producer, transporter and user of coal, and only secondarily scientific; that is, to bring out resemblances and differences based on similarities or dissimilarities of origin and history of the coal. It is therefore based on obvious physical differences and proximate analyses. This paper is intended to bring the matter to the attention of coal men and students of coal, for the purpose of inviting constructive criticism, with the hope that it may then be possible to give the classification fairly permanent form, or as permanent a form as can be secured with the present available knowledge. The classification is the result of a comprehensive study of the many thousands of analyses made by the Bureau of Mines, supplemented by many state analyses, combined with studies of the physical properties of the coals of the United States, as made by myself and others during the past twenty or more years, or as described in tests of coal made by the U. S. Geological Survey, the Bureau of Mines, the Navy and others.

The available material is still far from complete, and the basal studies have not been exhaustive, as such studies will doubtless occupy many men many years in the future. Thus the classification here presented cannot lay claim to finality.

The study is based on a series of what are here called "standard" types, which have been arrived at as the result of a long series of pick-and-try tests, and which it has been decided are of sufficient difference to warrant recognition. These types are based on "standard analyses"; that is, an analysis of the coal as "received" or "as fired," but reduced (if necessary) to a standard of impurities. The impurities of the coal, the things not characteristic of the types, are ash, sulphur and, to a lesser extent, nitrogen. For the standard analysis, there has been selected as a fair average 6 per cent. of ash, 1 per cent. of sulphur and a percentage of nitrogen varying from 0.75 per cent. in anthracite to 1.5 per cent. in most of the intermediate types, and decreasing to 0.75 per cent. with lignites.

A careful study of the moisture of coal has convinced me that the moisture content, within certain limits, is a characteristic of the coal. The fact that dried coals of different types subjected to the same conditions of temperature and vapor tension will absorb different but characteristic amounts of moisture, as brought out clearly by the experiments of Porter and

\*First installment of a paper presented before the fall meeting of the American Institute of Mining Engineers, Chicago, September, 1919.

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TABLE I. AIR DRYING OF LOW-RANK COALS

Lignites			Sheridan Coals			Iowa Coals			Rock Springs Coal			Indiana Coals		
As Received	Loss	Air-dried	As Received	Loss	Air-dried	As Received	Loss	Air-dried	As Received	Loss	Air-dried	As Received	Loss	Air-dried
34.5	21.0	14.5	22.7	6.6	16.1	17.1	9.4	7.7	8.5	2.3	6.2	15.3	11.3	4.0
35.7	23.3	12.4	21.4	6.6	14.8	16.1	8.6	7.5	9.7	2.8	6.9	15.9	10.4	5.5
35.4	17.0	18.4	20.3	7.1	13.2	14.0	4.5	9.5	10.9	1.5	9.4	16.9	13.1	3.8
43.7	35.3	8.4	23.2	10.0	13.2	18.5	7.1	11.4	14.4	4.2	10.2	10.9	7.0	3.9
29.7	22.4	7.3	24.7	15.0	9.7	14.2	10.4	3.8	14.5	4.1	10.4	12.9	7.6	5.3
43.5	32.6	10.9	24.7	10.4	14.3	16.9	15.5	1.4	13.5	3.8	9.7	13.5	5.1	8.4
35.9	12.7	23.2	22.8	8.7	14.1	12.0	6.6	5.6	12.4	4.0	8.4	13.9	7.8	6.1
32.0	19.3	12.7	23.5	15.8	7.8	15.8	10.4	5.4	13.1	4.4	8.7	.....	.....	.....
32.4	23.1	9.3	19.8	7.0	12.8	14.4	9.6	4.8	11.6	6.0	5.6	.....	.....	.....
42.6	35.6	7.0	23.5	6.9	16.5	15.4	11.0	4.0	13.0	3.4	9.6	.....	.....	.....
35.3	23.6	11.7	22.0	5.0	17.0	11.3	7.9	3.4	11.5	7.1	4.4	.....	.....	.....
32.6	10.4	22.2	21.4	4.5	16.9	12.0	8.0	4.0	14.9	9.1	5.8	.....	.....	.....
42.3	38.5	3.8	23.5	6.9	16.6	.....	.....	.....	13.1	6.1	7.0	.....	.....	.....
46.6	12.0	24.6	23.5	14.6	8.9	.....	.....	.....	.....	.....	.....	.....	.....	.....
42.3	35.8	6.5	25.3	16.5	8.8	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	23.9	7.8	16.1	.....	.....	.....	.....	.....	.....	.....	.....	.....

Ralston,<sup>1</sup> is just one line of evidence of the truth of this. As far as possible, types have been chosen that do not vary greatly in moisture content at the mines (as shown by analyses of mine samples) and at the point of delivery (as shown by large numbers of analyses of coals taken at points of delivery on Government contracts).

It may be asked why "air-dried" analysis are not used. A study of the air-drying results shown in Table I seems to indicate that, as yet, air-drying methods have not been standardized, so as to give results consistent with themselves or with the analyses of the coals "as fired," which latter are, after all, the data of most value for the buyer and engineer.

It will be noted from the table that on the "air-dried" basis, some of each of the coals have a moisture content of about 8 per cent. and the air-dried analyses of those samples, on the air-dried basis, as might be expected, can hardly be distinguished.

The term "rank" of the coal is here used to designate the extent to which a coal has advanced in its progress from peat to graphite. The term "grade" is here used to designate the purity of the coal with reference to the content of ash, sulphur or other specific impurities of deleterious action. Most of the coal types are separated by a difference of 750 B.t.u. on the basis of the "standard" analysis. To have selected a smaller difference would have increased the number of types and the difficulty of classifying a given coal; and to have increased the difference would have enlarged the range of a coal so that two coals falling within the same type might give an appreciably different service.

Coals differ in three ways: in origin, rank and grade. These differences may be revealed by either the physical or chemical characteristics or both. A notable illustration of coals differing in origin is shown by a comparison of cannel and bituminous varieties.<sup>2</sup> Here there are both pronounced physical and chemical differences. The differences between "block" coals and similar bituminous coals are due to origin and, so far as present studies have gone, are revealed in their physical characters only.

The rank of a coal is revealed in both its chemical and physical character. Chemically, coal, in changing from peat or lignite to graphite, shows a progressive elimination of its volatile constituents and a corresponding increase in the proportion of the uncombined carbon and ash. As ordinarily analyzed, fresh peat contains from 80 to 94 per cent. of moisture, from 3 to 7.5 per cent. of volatile matter, from 1 to 4 per cent. of fixed carbon; the rest is ash. Clean peat

(not muddy) will have between 90 and 94 per cent. moisture. Fresh lignite has between 40 and 45 per cent. of moisture and about 25 per cent. each of volatile matter and fixed carbon, the rest being ash. There has then, been a reduction of the proportion of both moisture and volatile matter.

A typical analysis of peat from Beaver Marsh, near Hartford, Conn., shows: 91.2 per cent. moisture, 6.6 per cent. volatile matter, 1.8 per cent. fixed carbon and 0.3 per cent. ash. If this is freed of ash and the analysis generalized, it might read: moisture 91.5 per cent., volatile matter 6.5 per cent., and fixed carbon 2 per cent., which figures may be assumed to represent the number of pounds of each in 100 lb. of peat. A typical analysis of lignite from Bainville, Valley County, Montreal, is: moisture 42.8 per cent., volatile matter 25.7 per cent., fixed carbon 26.8 per cent., ash 4.6 per cent. This, freed from ash and generalized, might read: moisture 45 per cent., volatile matter 27 per cent., fixed carbon 28 per cent. If it be assumed that this lignite had been derived from the peat just described and that in the process there had been no change in the actual amount of fixed carbon, then the 28 per cent. of fixed carbon in the lignite equals 2 lb., comprising all there was in the peat, the 27 per cent. of volatile matter equals 1.93 lb., a loss of 4.57 lb. of volatile matter from that in the peat. Likewise, the 45 per cent. moisture represents a loss of moisture from 91.5 lb. to 3.26 lb. If a similar comparison is made between North Dakota lignite and Sheridan, Wyoming, sub-bituminous coal, Iowa coal, and so on up the list, it may be noted that while the amount of moisture in the coal steadily decreases the percentage of volatile matter keeps about even with the percentage of fixed carbon through all of the lower rank coals until the moisture has reached a stabilized minimum, beyond which the percentage of volatile matter is rapidly reduced.

As a matter of fact it can be shown that the amount of fixed carbon does not remain constant but decreases from one type to the next higher so that the actual loss of volatile matter and moisture is greater than indicated, and a study of the ultimate analysis shows that the character of the volatile matter also undergoes a change. However, for the purpose of dis-

TABLE II. RATIO OF FIXED CARBON TO VOLATILE MATTER AND MOISTURE, COMBINED — F.C. V.M. + H<sub>2</sub>O

Coal	Ratio	Coal	Ratio
Anthracite.....	10.7 +	Saint Clair County, Ill., coal...	0.96
Bernice coal.....	6.8	Sangamon County, Ill., coal...	0.84
Brushy Mountain, Va., coal...	4.8	Sherridan County, Ill., coal...	0.78
Pocahontas coal.....	3.7	Grundy County, Wyo., coal...	0.68
Sewell, New River, coal.....	2.8	Carney, Wyo., coal.....	0.62
Kennelsville coal.....	2.0	Gillette, Wyo., coal.....	0.56
Pittsburg coal.....	1.60	Wood County, Tex., lignite...	0.50
Beaver River, Penn., coal...	1.2	Houston County, Tex., lignite...	0.43
Gallatin County, Ill., coal...	1.09	Williston, N. Dak., lignite....	0.37

<sup>1</sup>H. C. Porter and O. C. Ralston: Some Properties of Water in Coal. Bureau Mines Tech. Paper 113.

<sup>2</sup>G. H. Ashley: Cannel coal in the United States. U. S. Geol. Survey Bulletin 659.

tinguishing coals by rank, the simplest system is to assume that the fixed carbon remains stationary and that there is a steady loss of moisture and volatile matter. This may be expressed as a ratio or curve as shown in Table II.

Remembering, however, that in the high-rank coals the moisture is stationary and the loss appears to be entirely in the volatile matter, while in the lower rank coals the volatile matter losses appear stationary, with reference to the fixed carbon, it is possible to arrange a double ratio table in which the higher rank coals are distinguished, as now, by the ratio of the volatile matter to the fixed carbon or by the well-known "fuel ratio" and the lower coals by the ratio of moisture (as received) to fixed carbon. A table so constructed appears as shown in Table III.

After a careful study of various proposed methods of distinguishing the rank of coal, I believe the forego-

TABLE III. FUEL RATIO AND FIXED CARBON MOISTURE (OR AS HERE DESIGNATED F.C.M.) RATIO

Coal	Fuel Ratio	Carbon Moisture	Coal	Fuel Ratio	Carbon Moisture
Anthracite.....	10+	10+ (30+)	Saint Clair County, Ill.	1.4	4.0-6.0
Bernice.....	7-10	10+ (27+)	Sangamon County, Ill.	1.4	2.5-4.0
Brushy Mountain, Va.	5-7	10+ (26+)	Grundy County, Ill.	1.4	2.0-2.5
Pocahontas.....	3.5-5	10+ (24.5)	Sheridan, Wyo.	1.4	1.7-2.0
Sewell.....	2.5-3.5	10+ (23)	Carney, Wyo.	1.4	1.4-1.7
Connellsville.....	1.85-2.5	10+ (21.5)	Gillette, Wyo.	1.4	1.0-1.4
Pittsburg.....	1.4-1.85	10+ (19.5)	Wood County, Tex.	1.4	0.85-1.00
Beaver River Pa.	1.4	10+ (17)	Houston County, Tex.	1.4	0.65-0.85
Gallatin County, Ill.	1.4	6.0-10.0	Williston, N. Dak.	1.4	0.5-0.65

ing method the best yet found, involving, as it does, only proximate analysis results. According to the table the lignites are found to fall between 0.5 and 1 in the fixed carbon moisture ratio; the principal sub-bituminous coals fall between 1 and 2; and the so-called bituminous coals between 2 and 10+, beyond this point they are separated on the basis of fuel ratio, as now. In preparing a scheme to cover all coals, full account must be taken of the physical as well as the chemical properties, as many coals having similar chemical composition, as shown by the usual analysis, may differ greatly physically, due to difference of origin or subsequent history, and therefore should not be put into the same class. No scheme based entirely on present known chemical differences may be used to differentiate all types of coal.

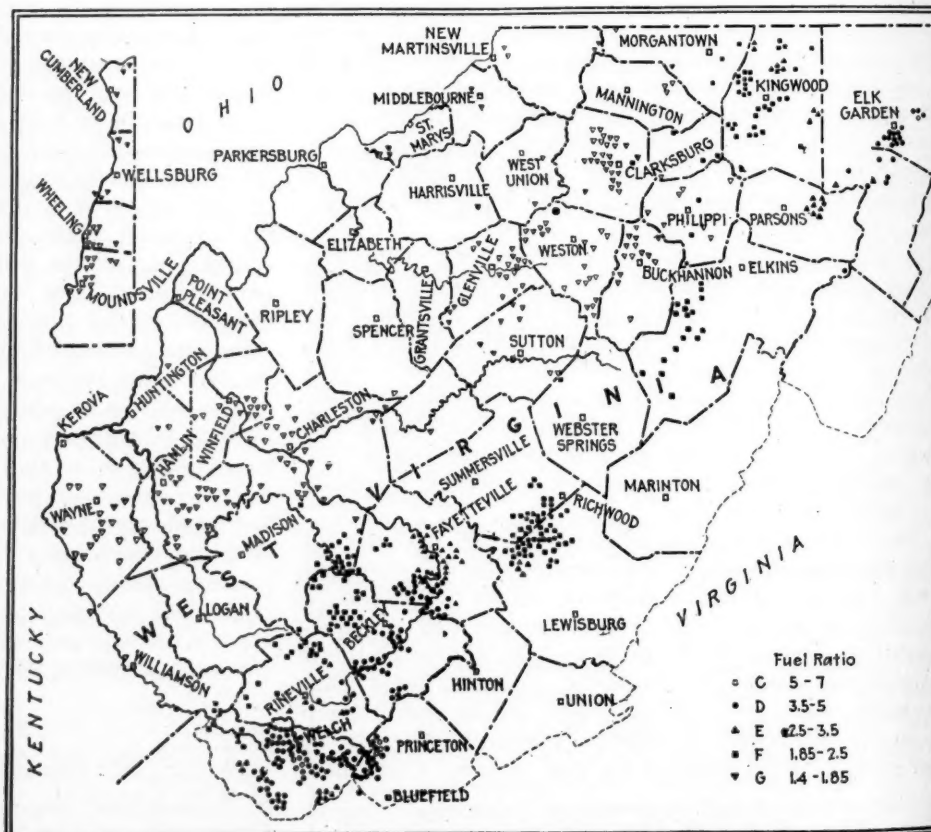
In Table IV attempts have been made to cover all of the common varieties of coal known in the United States. The coals are divided into those of compact texture and those of woody, fibrous or earthy texture. As a matter of fact, woody texture occurs and may be distinguished with the microscope in coals ranging all the way to moderately high-rank bituminous varieties. Where, therefore, doubt exists as to whether a coal has compact, woody,

fibrous or earthy texture, the second test given in the table is used. If the moisture, as received, exceeds the fixed carbon, as received, the coal is classed as lignite or peat. If it does not, it is classed as bituminous or higher-rank coal.

Geographic names corresponding to those now in common use in designating coals are proposed for the several types, except that the type name is made to end in *ite* to correspond to the endings of graphite, carbonite, anthracite and lignite, already in use. Thus, Pocahontas coal is called Pocahontite. Pocahontas coal may continue to mean, as now, coal from the Pocahontas district of West Virginia and Virginia; Pocahontite will mean coal of Pocahontas rank of any grade from any part of the world.

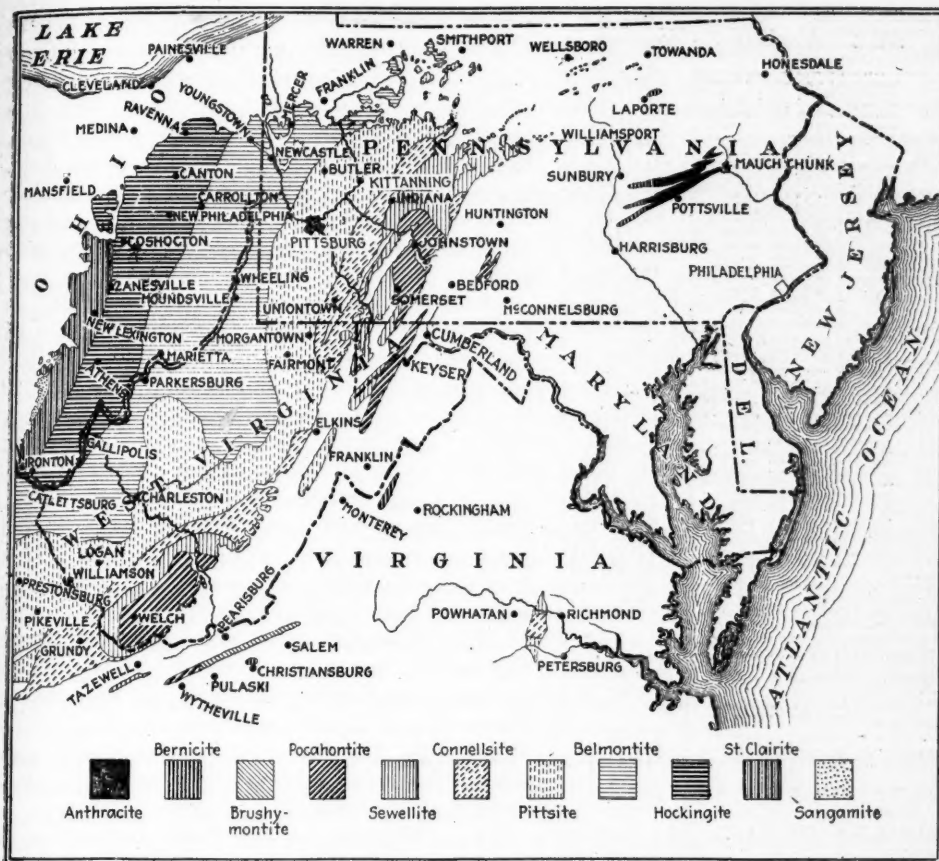
Following the key and omitting discussion of graphite and carbonite (native coke), the coals with compact texture are divided into anthracite and bitumite classes. The first class has a fuel ratio of 7 or more and a non-luminous flame. The second class has a fuel ratio of less than 7 and a luminous flame. The latter class includes the bituminous and sub-bituminous coals. The luminous flame indicates the presence of hydrocarbons in the volatile matter, and their presence is taken to indicate the bituminous character of the coal. The anthracites may then be divided into the true, or hard, anthracite, with a conchoidal fracture, high specific gravity and sub-metallic luster, and the soft anthracite, with semi-cubic fracture and low specific gravity. The type of the soft anthracites is found at Bernice, Sullivan County, Pennsylvania. The line between the two is drawn at a fuel ratio of 10.

Bitumites are first divided into those having a B.t.u. value of over 14,300 and those having a B.t.u. value of under 14,300 on the coal free of moisture, ash



CLASSIFICATION OF WEST VIRGINIA COALS





CLASSIFICATION OF THE WELL KNOWN COALS

and sulphur. As previously stated, in the change of the coal from peat to anthracite there is a more or less steady change in the composition of the volatile matter. The volatile matter of peat contains from 35 to 60 per cent. of oxygen. In the lower rank post-Carboniferous coals, this high percentage of oxygen is maintained and tends to hold the heat value of the volatile matter to a point well below the heat value of a similar amount of fixed carbon. In the coals of Carboniferous age and in a few of the post-Carboniferous coals, the oxygen in the volatile matter is commonly less than 25 per cent. and the heat value of the volatile matter correspondingly increased. By drawing the line at 14,300 B.t.u. it is believed that practically all of the Carboniferous coals, certainly those of the United States, are included above the line, and a majority of the post-Carboniferous coals placed below the line.

This B.t.u. figure has been obtained by the formula:

$$\text{B.t.u. (ash, moisture, sulphur free)} = \frac{\text{B.t.u. (coal as received)} - 40S}{100 - (\text{moisture} + \text{ash} + \text{sulphur})}$$

It may be noted that due to climate, or some other cause, some of the western post-Carboniferous coals with a low B.t.u. value on ash-, moisture-, sulphur-free basis have a lower percentage of moisture than some of the coals of Carboniferous age, and therefore a higher B.t.u. value on the "as received" basis, notwithstanding the low rank and character of the volatile matter. The coals below 14,300 B.t.u. on the ash-, moisture- and sulphur-free basis include, in general, the coals commonly called brown coals in Europe, following the classification of Zincken\* and others.

The higher-rank bitumites are then divided into the

Virginities or so-called smokeless coals having a fuel ratio between 2.5 and 7, a short to medium flame, and coals having a fuel ratio below 2.5 and a long flame. The Virginities are divided into three types, those having a fuel ratio of from 5 to 7, from 3.5 to 5, and from 2.5 to 3.5. The first is a non-caking coal with a fuel ratio between 5 and 7. This coal is not abundant in this country, though found in the Brushy Mountain field of Virginia, the Coal Hill field of Arkansas, and a few other places. This is the type of the best "Admiralty" coals of Wales, so long used by the British Navy.

The other two types are both caking coals; that is, they swell up in burning and run together into a cake, and if other characteristics are favorable they may be used in the making of coke. They are separated into two types according to the length of flame. The short-flame type is typified by the Pocahontas

coal of eastern-central McDowell County, West Virginia, and the medium-flame type by the Sewell coal below Thurmond on the New River. The line between them and on either side is drawn on the basis of the fuel ratio. The Pocahontas type is limited by a fuel ratio of from 3.5 to 5 and the Sewell type by a fuel ratio of from 2.5 to 3.5. In accepting the lowest fuel ratio just given, account was taken of the fact that Sewell coals with a fuel ratio of 2.8, as sampled by myself, have been on the Navy accepted list.\*

The long-flame coals are divided into the caking, or steam, coals, and the non-caking, or household, coals. The caking long-flamed coals are then divided into two groups according as their fuel ratio is above or below 1.4. The former are here called the Pennsites, from their well-known occurrence in Pennsylvania ("Pennsy"). The Pennsites include two types, according as the fuel ratio is above or below 1.85. Those above 1.85 are termed Connellsite, from their typical occurrence in the Connellsville basin in Fayette and Westmoreland Counties, Pennsylvania. They are commonly suited to the making of coke in beehive ovens if of proper grade. The lower group, having a fuel ratio of between 1.4 and 1.85, are called Pittsites and are typified by the Pittsburgh coal south of Pittsburgh. They are good steam fuels, and, if of proper grade, are suitable for making gas and byproduct coke.

The coals having a fuel ratio below 1.4 are then divided into the Ohioites, characteristically developed in Ohio, having a fixed carbon moisture ratio of more than 6; and Illinoites, high-moisture coals having a fixed

\*C. F. Zincken: "Die Physiographie der Braunkohle," 5, Leipzig, 1867.

\*Attention should be called to the statements on page 29, Bulletin 22, of the Bureau of Mines, regarding the unreliability of the determination of volatile matter in analyses bearing laboratory numbers between 5147 and 9120. In this study, those analyses have been discarded insofar as they bore on fuel ratio or content of volatile matter or fixed carbon.

TABLE IV. CLASSIFICATION OF COAL, WITH KEY, ANALYSES AND VARIOUS DATA AND RATIOS

Key to Classes	Classes	Err to Groups	Key to Types	Types, Names	Type Locations	Coal Letters	Heat Value in British Thermal Units (B.t.u.)				Analysis (Standard Reduced to 6 Per Cent. Ash)				Ultimate				Standard Prox.				Prox. Matter				Carbon Ratios			
							Range	Aver.	Coal (Lab. est.)	Range	Fixed Carbon	Mixture	Aver.	Range	Hydrogen	Carbon	Hydrogen	Carbon	Hydrogen	Carbon	Hydrogen	Carbon	Hydrogen	Carbon	Hydrogen	Carbon	Hydrogen	Carbon	Hydrogen	Carbon
Polished (fresh of above)	Graphite (native coke)	Flameless	10-100	Graphite	Midwestern, Va.	A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z	10,000-12,000	12,000	10,000-12,000	12,000	10,000-12,000	12,000	10,000-12,000	12,000	10,000-12,000	12,000	10,000-12,000	12,000	10,000-12,000	12,000	10,000-12,000	12,000	10,000-12,000	12,000	10,000-12,000	12,000	10,000-12,000	12,000	10,000-12,000	12,000
							10,000-12,000	12,000	10,000-12,000	12,000	10,000-12,000	12,000	10,000-12,000	12,000	10,000-12,000	12,000	10,000-12,000	12,000	10,000-12,000	12,000	10,000-12,000	12,000	10,000-12,000	12,000	10,000-12,000	12,000	10,000-12,000	12,000	10,000-12,000	12,000

carbon moisture ratio of less than 6. There is a marked change in calorific value in Ohio coals from east to west, due to increasing moisture content toward the west. On this basis, the coals are treated as of two types, Belmontites, as found in the Belmont field, having a fixed carbon moisture ratio of over 10, and Hockingites, as found in the Hocking Valley field, with a fixed carbon moisture ratio between 6 and 10.

The coals of Illinois change markedly in rank from southeast to northwest. In southern Gallatin County, the coal is of Belmontite rank. North and west of this locality the coal, as received, contains from 4 to 8 per cent. of moisture. These coals have a B.t.u. value of from 12,250 to 13,000. West of Gallatin County and typically developed in St. Clair County, just east of St. Louis, is found the type of coal here called St. Clairite. This type has a fixed carbon moisture ratio of 4 to 6 and a B.t.u. value of between 11,500 and 12,250. Farther north and centering about Sangamon County is a type of coal with high moisture, the fixed carbon moisture ratio being 2.5 to 4, and the B.t.u. value between 10,750 and 11,500; it is here called Sangamite. In the northern coal counties of Illinois, the coal commonly has over 15 per cent. moisture.

The non-caking, or household coals differ in origin from the caking coals and are divided into two groups, here called the splintites, or splint coals, which have a laminated structure and cubic or tabular fracture; and the cannelites, or cannel coals, which have a massive structure and conchoidal fracture. The splintites are characteristically high-moisture coals, as compared with other bituminous coals of the same region. I would explain this as being due to the absorption, or holding, of the moisture in the mineral charcoal layers of the coal. The cannel coals are characteristically low-moisture coals but the typical cannel coals are high in volatile matter. Four types of splintite have been picked, which differ both physically and chemically as well as in heat value. It is not necessary to describe them in detail, as probably all are well known to coal men. Coalburgite is a typical West Virginia "splint" coal named from Coalburg, W. Va., which appears to have been the first point from which that type of coal was extensively shipped. Kennilworthite is a low-moisture non-caking coal found at Kennilworth, Utah; it is fundamentally a little lower in rank than Brazilite, but probably climatic conditions have reduced its moisture content so that according to the plan of classification it stands higher. Brazilite is the type known for over a half a century as Indiana block coal or Brazil block coal. Mendotite is a type of block coal, found at Mendota, Mo., that differs from the last mainly in its lower heat value.

The cannelites, including cannel and canneloid coals, are differentiated by differences of fuel ratio. Canneloid anthracite and semi-anthracites are not listed here as their canneloid character does not affect their use.



**Altizite**, named from the Altizer mine,  $\frac{1}{2}$  mile north of Faraday, Tazewell County, Virginia, is a non-coking coal in contrast with the Pocahontas coal, which is a coking coal, and therefore may possibly find a different use. The other types down to Canfieldite are lean cannels or canneloid coals having the physical properties of cannels but not the chemical properties. True cannels have been defined as coals of bituminous rank having a fuel ratio of less than 1.

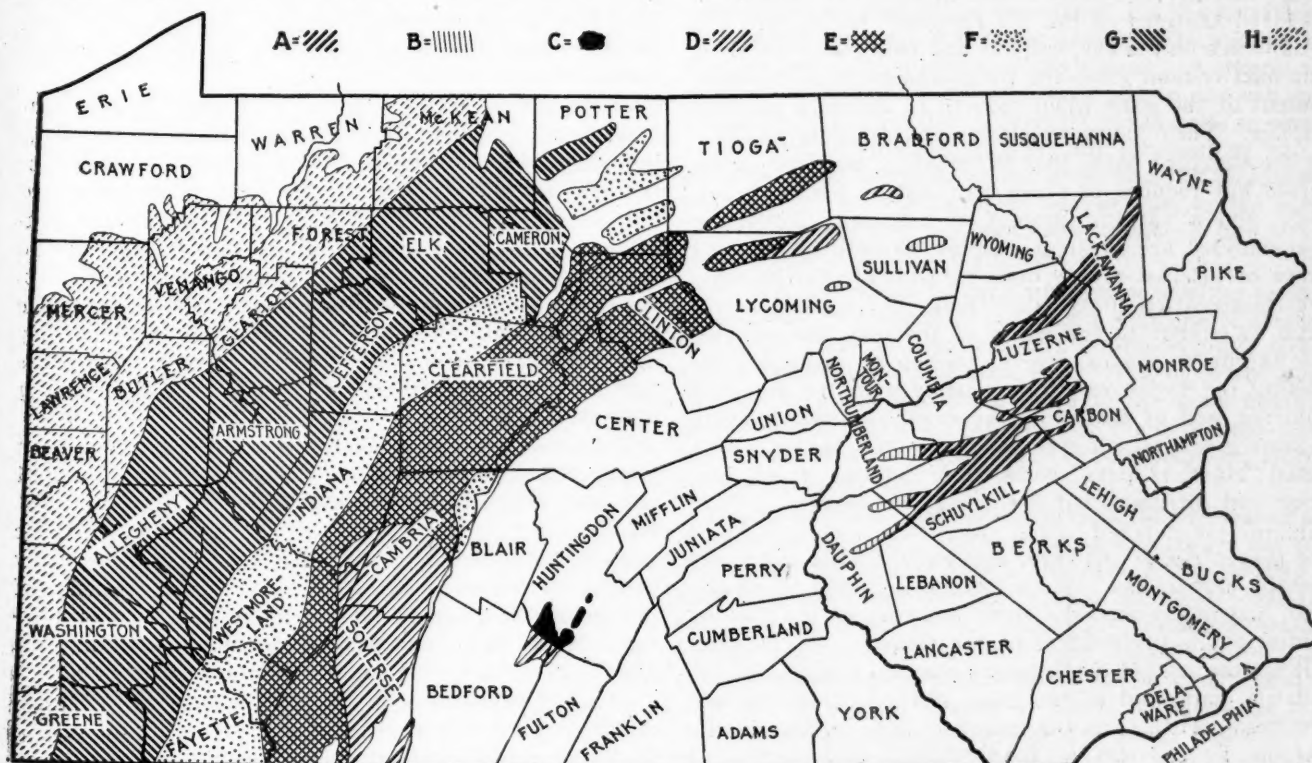
The lower rank bituminous coals having a fuel value of less than 14,300 B.t.u. on the ash, moisture, sulphur free basis are divided into two groups: those that resist weathering and may be stocked or shipped long distances and those that, when exposed to sun and rain, tend to break down rapidly. If necessary to draw a definite line between these groups, it is suggested that coals, lumps of which, free of pyrite, exposed to alternate wetting and drying break down and lose their shape within one month shall be classed as non-weather-resisting. The weather-resisting group is divided into three types, according as they are low, medium or high in moisture or in the reverse order in difference of fixed carbon moisture ratio. These coals are called Montanites, as the three types are all taken from Montana.

The low rank non-weather-resisting bituminous coals, or subbituminous coals, are characterized by their lightness and tendency to break down as they lose moisture, the fracturing commonly following irregular, or zigzag lines. The types are all drawn from Wyoming with one exception, and are therefore called Wyomites. The one exception is Gallupite, of which the type locality is Gallup, N. Mex., and which is therefore grouped as New Mexite. Gallupite and Hannite have many points of resemblance, but judging by the character of the volatile matter Gallupite is of a considerably higher rank than Hannite.

The term lignite, though properly applied only to coals having a woody structure, is in this country ap-

plied to coals of all kinds in the first stages of anthracization. A study of the coals that have been classed as lignite in this country, not including those formerly called black lignite and more recently subbituminous, reveals that almost without exception they contain in the "as received" sample over 30 per cent. moisture, while the black lignites or subbituminous coals almost without exception contain less than 30 per cent. moisture. It is proposed, therefore, that coals in which the woody, fibrous or earthy texture is obvious shall be called lignite, regardless of their moisture content, but that of coals in which the woody texture is not obvious only those having a fixed carbon moisture ratio of less than 1 on the "as received" basis shall be classed as lignite. As so grouped, the class lignite includes coals that range from those obviously 75 to 85 per cent. wood to those that do not contain any wood, such as the canneloid coals derived from accumulation of algæ, spores and spore cases and other non-woody vegetal material accumulated in water to which the name "sapropel" has been given. If the term "xyloid," meaning woody, is applied to the woody lignites, the class lignites may be divided into three subclasses, xyloid lignites and sapropel, or canneloid lignites and an intermediate class.

Lignites differ greatly in percentage of moisture and thus in fixed carbon moisture ratio, in fuel ratio and in heating value. Unfortunately the coal from the same mine differs so greatly that it is not possible to classify the coal closely on these characteristics. Thus, the fuel ratio of the coal from Hoyt No. 3 mine in Wood County, Texas, varies from 0.46 to 1.14. Coal from the Snyder mine 8 miles north of Glendive, Mont., varies in fuel ratio from 0.31 to 1.0. In like manner, the moisture content will vary according as the coal is fresh or has had time to dry out. Thus mine samples from the Lehigh mine, Stark County, North Dakota, all have over 42 per cent. moisture, but samples taken from carload lots from the same mine range from 32 to 35 per cent. moisture. A classification on the fixed carbon moisture



THE CLASSIFICATION SCHEME AS IT WOULD APPLY TO COALS OF PENNSYLVANIA.





other coals that by the analyses alone are of lower grade and heat value. To present these facts, two methods may be adopted: the designation of the rank of the coal by name or letter may be followed by a brief descriptive statement of the coal, as—Pocahontite, 7 per cent. ash, 8 per cent. sulphur, high fusibility. Or, to facilitate brief description by wire or cable, certain letters to which are assigned definite range of meaning may be used. Thus, it is suggested that *a*, *s*, and *f* stand respectively for ash, sulphur, and fusibility, and that these be prefixed by small letters which should have the following limited meanings:

TABLE OF LETTER ABBREVIATIONS TO EXPRESS GRADE OF COAL

	Ash Per Cent.	Sulphur Per Cent.	Fusibility, Deg. F.
<i>vl</i> = very low.....	0-4	0-0.75	Less than 2200
<i>l</i> = low.....	4-8	0.75-1.5	2200 to 2400
<i>m</i> = medium.....	8-12	1.5-2.5	2400 to 2600
<i>h</i> = high.....	12-20	2.5-4	2600 to 2800
<i>vh</i> = very high.....	Over 20	Over 4	Over 2800

Using these letters and those that indicate the rank of the coal it is possible to describe a coal fully, as follows: *D*, *la*, *ls*, *hf*, stands for a smokeless coking coal with a fuel ratio between 3.5 and 5, an ash between 4 and 8, a sulphur content between 0.75 and 1.50, an ash with a fusing point of between 2600 and 2800 deg. F.

Should this proposed plan of coal classification meet with definite approval, it is proposed to prepare an extended paper discussing the whole problem in detail, together with detailed descriptions of each type and possibly maps showing the occurrence of the several types throughout the country.

### Drum Controller for Series-Parallel Operation of Locomotive Motors

A drum type of controller for series-parallel control of two-series motors is one of the new products of the Cutler-Hammer Manufacturing Co., of Milwaukee, Wis. This controller, which is provided with both a main and a reverse cylinder, is for use on storage-battery or trolley locomotives using 250 volts or less.

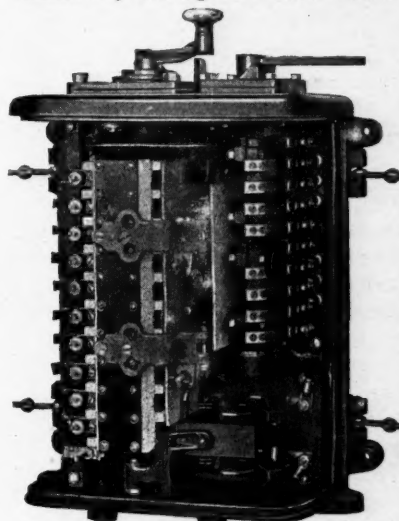
The motors are accelerated by the main cylinder, which has seven points of control. A star wheel provides an interrupted motion to the lever, so that the operator readily feels the speed points. The fourth point is the full series or low-speed running point, and the seventh the full parallel or high-speed running point. All intermediate positions are resistance points. The Wheatstone Bridge method is used for transition from motors in series to motors in parallel between the fourth and fifth points of control, and as the circuit is not opened, continuous torque is obtained during the transition. Arc barriers are provided between each contact finger, and strong magnetic blowouts prevent excessive arcing.

The reverse cylinder is positively interlocked with the main cylinder so that it cannot be operated when the latter is in any but the "off" position. The fingers of the reverse cylinder are therefore not used for making or breaking the current; hence the contact parts will last indefinitely, and magnetic blowouts are unnecessary.

Two cutout switches allow either motor to be bypassed, if it becomes damaged in any way, and the loco-

motive operated by the other motor until repairs are made. When one cutout switch is thrown to bypass its corresponding motor, mechanical interlocks prevent closing the other cutout switch or operating the main cylinder beyond its full series position, thus eliminating the possibility of a short circuit.

A dust-tight and weatherproof construction is obtained by fitting the sheet metal cover under a ledge in the top and providing a rubber gasket between the edges of the cover and the cast-iron frame.



ARRANGEMENT OF PARTS

The contact fingers and segments may be adjusted or renewed without removing the cylinders from the drum case. Those on the reverse cylinder are exposed by merely loosening two thumb nuts and throwing back the blowout plate and arc barriers.

Most mine duty apparatus is employed where the service conditions are severe and delays in operation costly; consequently this new controller has its parts liberally proportioned so as to prevent wear and breakage, while those parts that wear unavoidably are made accessible and easily renewable.

### Unconsumed Fuel

With gas or oil engines it is a comparatively easy matter to ascertain whether combustion is approximately complete, for the general behavior of the engine, and the character of the exhaust gases are indications enough as to whether this is so or not. The question of the quantity of unconsumed (though consumable) material conveyed to the ash heap from a coal-fired boiler is unfortunately not quite so simple. If one examines carefully almost any ash heap, it will be possible to find a greater or less proportion of both raw coal and coke in various stages of consumption in the ashes. This constitutes a serious waste and suggests a field wherein it may be possible to economize.

A simple check can be kept, where apparatus for analysis is available, by observing the actual percentage of ash sent out to the dump as compared with the theoretically incombustible content of the original fuel. It is, of course, never possible to bring the former down to the same figure as the latter, but by careful attention to the conditions under which combustion is carried out, the excess amount may be cut down appreciably.

This unconsumed fuel also aggravates the problem of ash disposal, which is in itself often a serious matter for consideration. In view of this it has been found possible to set fire to ash-heaps and thus reduce their bulk considerably, the combustion being a comparatively low-temperature process and the residue comprising almost entirely the genuine incombustible according to the original chemical analysis. The cubic capacity by which the ashes are thus reduced in bulk may be considered a rough indication of the amount of combustible matter which had been wastefully deposited.

# Eliminating Mine Pumps

Construction of the Jack Run Drainage Ditch by the Consolidation Coal Co. is an Innovation in the Problem of Dewatering the Mine

By L. A. RIGGS  
Fairmont, W. Va.

**T**HE elimination of mine pumps in some instances is a difficult problem, but in a large number of mines they ought to be eliminated. This, of course, means that considerable ditching is required. There is one other way, however, to avoid the use of pumps and that is to use a siphon. This device is being employed extensively in small operations. Most people are familiar with the principle of the siphon. It is essentially an appliance for raising water over an elevation and depositing it at a lower level. This system, however, only applies to small mines as the siphon will not work satisfactorily over an elevation of more than 25 ft. I do not intend to deal further with the siphon as a means of supplanting pumps since its use is known to practically all mining men and it can only be considered as a temporary arrangement.

Water may be encountered either as temporary or permanent feeders. As is well known the primary source of permanent feeders is rain. Rain water in part evaporates, part is carried away by streams and a part sinks into the ground. The proportion that sinks into the earth depends upon the porosity of the strata. If the rocks are open in texture and are not interrupted by faults, the rain will penetrate them quite rapidly while if they are broken by the removal of coal or even pierced by shafts rain water may find its way into a mine soon after it falls.

In some cases the effects of a heavy rainfall are felt almost immediately while in others it requires a few days before the water is noticeable in the mines. There are some instances where large beds of porous rocks may act as reservoirs and so regulate the feeders that little if any variations are noticed. Temporary feeders occur when old workings having no external source of supply are tapped or when ponds of water contained in rocks, which are entirely isolated by faults are encountered. From the above it will be noted that in almost any coal mine, water may be expected and it is necessary to evacuate it in some manner. The three most important methods of handling this water are by ditching, siphoning and pumping. The most economical and the method in most general use where practical is the drainage ditch.

In opening a property the drainage problem is a serious one and must be given especial attention. There are few mines that have been extensively worked that do not have more or less water to contend with and which must be handled by some means. Mines are opened in various ways: Some are drifts, some are slopes and some are shafts. The drift mine no doubt is the most economical to drain, provided the mine opening is on the low side of the property and projections are so made as to allow all of the workings to be driven to the rise. This advantage is not frequently afforded as mines can not be opened at any point desired. There are always problems in the way when opening mines and all difficulties must be considered. Slope and shaft mines are more difficult to dewater and almost always require the use of pumps.

In projecting various mining properties the drainage problem must be considered along with the other proposi-

*In many cases the water made by a mine may be drained either to a central sump and thence pumped to the surface as in shaft or slope mines or a general drainage system discharging to the outside may be installed as in drift mines. In deep drainage ditches tile or its equivalent should be laid. It is believed that pumps should be supplanted by gravity drainage wherever this is feasible.*

tions which, as is well known, is one of the important factors. In driving main entries from the mine opening to the limit of the

property the entries may be driven to the rise for a thousand feet or more and then go to the dip and the dip workings almost invariably make considerable water. I would not recommend the immediate ditching of main entries when they first start to drive on the dip because of the fact that when the entries have been driven another thousand feet or so it may be impracticable to ditch them.

To remove water from main entries dipping in this way would require the use of a pump or if not too much water was made it might be removed by bailing. This, of course, would be decided upon by the man in charge of the operation as this is one of his problems. The various manufacturers make small pumps of from 25 to 50 gal. capacity for entry driving and these machines can be moved from place to place with little trouble. I am of the opinion that it would not be practical to eliminate the small pumps from entries and would recommend their use in all such places making water, until the property has been developed sufficiently to determine upon a drainage system.

The most practical pump for entry driving is what is known as the Fairmont run-a-bout pump with a capacity of approximately 40 to 60 gal. per minute. This pump can be either direct connected or belted, is driven by a 2 h. p. motor, and can be so arranged or located that it will take care of water in several entries and can be relied upon to unwater working faces. I do not, however, recommend the use of this pump for handling large volumes of water as I know of cases where under such circumstances the pump is condemned.

When a mine has been operated for a number of years and a large number of entries have been driven it is a good idea to prepare a regular drainage map which should be made by the engineer in charge of the mine, that is, provided the development has encountered any difficulty in the way of drainage problems. It may be that in preparing the drainage map it will be found that the water could all be drained to one or possibly two central points and from this point or points discharged to the outside through a pipe line to the opening or through a bore hole to the surface. The plan to be decided upon should be worked out when all data has been obtained. Many hollows overlie various mines and these should be taken advantage of in the location of bore holes for pumping stations as the pump handling the water should not be operated against a greater head than is absolutely necessary. The capacity of the various pumping stations will be determined by the quantity of water to be handled and before any figures can be prepared some general understanding as to the amount of water to be taken care of must be determined.

After the general location of the pumping stations is decided upon it is not hard to locate the sump but this is indeed an important matter. The best practice is to locate pumps at or near the bore holes, provided the water is to be discharged to the surface. It is also important that the





VIEW OF JACK RUN DRAINAGE DITCH—ENTERING MINE

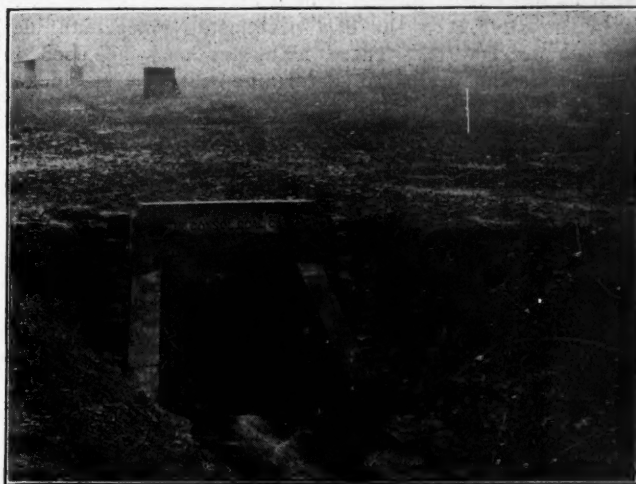
sump be located near the pump in order that the suction line may not be longer than is absolutely necessary. After the location of the bore hole, pump and sump have been decided it is then in order to determine the size of the sump and the capacity of pump and motor.

Centrifugal pumps are the most practical for underground pumping stations but the head against which the machine is required to operate determines the variety to be installed. It has been found that large underground pumping stations should be operated with alternating current taken into the mine through a bore hole. This avoids the necessity of running high voltage wires through the mine which, may be dangerous. When operating pump stations with direct current the power is almost always taken from the feeder wires nearest the pump station and of course when a fall occurs or any trouble whatever is experienced the pump will be stopped. However, if the pump is operated with alternating current a fall or any other occurrence in the mine that necessitates the cutting off of the power will not interfere with the operation of the pump. In deciding upon the size of the sump several features should be considered as it is not practical to construct a of the water in case the pump should be in need of repairs or the power should be off, say, for five or six hours. Pumps can not be operated continuously and it is good policy to consider all these matters when deciding upon the size of the sump.

Sumps are constructed in various ways, all depending upon the location and general conditions. Some sumps are made by building dams across entries, crosscuts, etc., while others are built by excavating in the bottom. Some mines have what are known as emergency sumps sometimes located as much as a mile from the sump at the pumping station. These emergency sumps are used to keep back the water after a continued general rain. The water from the

emergency sumps is drained off in amounts that the pump can readily handle. This is indeed a practical arrangement and where a large mine depends upon one main pumping station emergency sumps should be provided. This allows the mine officials to regulate and handle the water without danger of flooding the mine.

There are various ways of making ditches in coal mines and no general plan can be followed for all cases. In fact I might state that ditches can not be made in all mines, that is to say they can not be made economically because the bottom may be unusually hard. The making of small temporary ditches which are those mostly used can always be taken care of by the mine organization. However, in laying out large permanent ditches it is the duty of the engineer to handle the work. No mine foreman should be allowed to



MOUTH OF COMPLETED DITCH

undertake a large ditching proposition unless he thoroughly understands the work and its resultant problems.

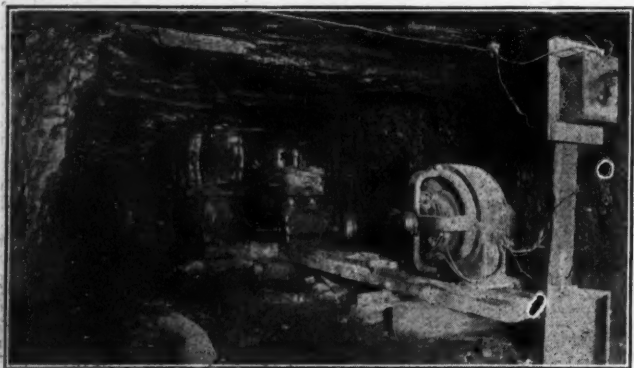
After a ditching proposition has been decided upon, when it has been determined that such a scheme is practical and that a certain section can be drained, levels should be run and permanent bench marks established. After deciding upon the proposed grade of the ditch, cuts should be marked on the rib in such a way that the mine foreman and his men will understand them. It is best to locate the grades every 25 ft. unless the ditch has considerable fall in which case it is believed that grades marked every 50 ft. would be sufficient.

The best way to give grades for an extensive ditching



AMCO SEGMENT BLOCKS IN DRAINAGE DITCH

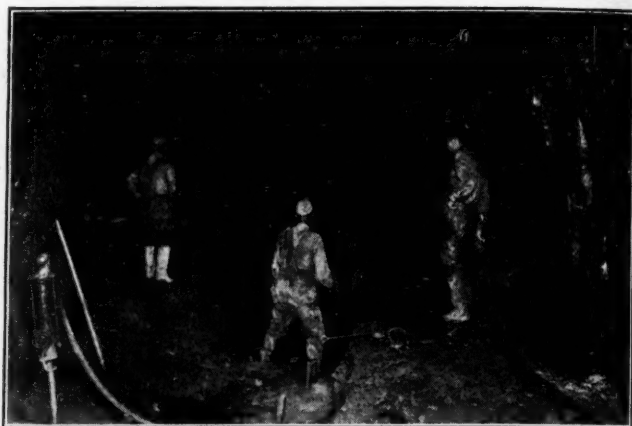
proposition is to drive wooden plugs into the rib and place nails therein, giving the distance from the nail to the bottom of the ditch. If the ditch is to be very deep, I would recommend laying tile and refilling. However, if the ditch does not exceed 5 ft. in depth, is not along a manway or haulway and the bottom is not soft, I would recommend that it be left open. Should it be deemed advisable to place tile in the ditch it is the best practice to place manholes every 50 to 100 ft. These manholes may be used in cleaning out the drain and determine where it is blocked



COMPRESSOR USED IN THE CONSTRUCTION

if such a thing ever occurs. It may be thought foolish to imagine that a tile drain will close but this will be the case if the ditch is comparatively flat and is not cleaned out occasionally.

Almost every mine official has his own ideas in regard to the location of ditches. Some contend that they should be along the main haulways while others assert that they should be in the airways. The location of the drainage ditches should be decided upon by careful examination on the ground and after taking all features into consideration. Personally I do not believe a ditch should be placed along the main haulway if it is to exceed 2 ft. in depth, unless tile is employed. If placed along the main haulway it can be looked after to better advantage as the mine foreman



CONSTRUCTING THE JACK RUN DITCH

and his assistants pass along the ditch every day and they can see for themselves its condition at all times.

If the ditch is placed in one of the airways the chances are it will not be seen more often than once a week and if it is in an airway where exhaust steam is carried, it will not be looked after at all unless something goes wrong. A fall may occur in the airway and block the ditch and cause considerable damage to be done before the fall is located.

As stated above there are various ways of making drainage ditches, all having their particular advantages. Where the bottom is soft a pick and shovel can be used to advantage but where a ditch is extra deep and the bottom hard,



APPEARANCE OF RESTORED SURFACE

jumpers or drills and considerable shooting are required. The best progress however, can be made by using a jack-hammer air drill. This, of course, necessitates the employment of an air compressor, piping, hose, etc., but when equipment of this kind is placed for use in making a ditch much better progress can be made.

My company (The Consolidation Coal Co.) is now constructing a large drainage ditch which will drain approximately 2600 acres of coal. This ditch is being driven on a 0.27 per cent. grade and is 10,000 ft. in length. Approximately 1800 ft. of the ditch is on the outside, paralleling a stream. The ditch being 20 ft. deep where it comes out of



the mine opening, requires that the outside portion must run out the grade. Where this ditch is over 6 ft. in depth tile, or in other words, Amco segment blocks, are used. These blocks form a drain 4 ft. in diameter and the portion thus tiled amounts to 1565 ft. The segment blocks are manufactured by the American Vitrified Products Co. successors to the American Sewer Pipe Company.

The 48" diameter drain requires 14 blocks to complete the circle and each block weighs 72 lbs. or 36 lbs. to the foot. These blocks are easily laid and we believe they will make a good drainage ditch. The only form work required is a template which is furnished by the manufacturer of the blocks. We find that these blocks can be used for various purposes and in fact we are experimenting with them for overcast work and for lining slopes. The ditch in which they are being used is under construction near Clarksburg, Harrison County, W. Va., and when completed we expect to eliminate pumps having a capacity of 6000 gal. per minute.

The ditch so far has cost \$60,000 and it is believed it will cost at least \$15,000 more to complete it. This is an expensive piece of work but we think the money will be well spent because about three times each year in the past one of our largest operations has been flooded, making it



VIEW INSIDE THE JACK RUN DITCH

necessary to close the mine for two or three days at a time. When the ditch is completed we expect to avoid this nuisance and as far as water is concerned we will be able to operate our mine throughout the entire year. The drain we estimate will carry, when running full, approximately 29,500 gal. of water per minute.

This ditch is mentioned simply to show the fact that the elimination of pumps is an expensive proposition. However, we believe it will pay in the end. The particular mine that will be drained and benefitted by this ditch is one of our largest operations and when a continued rain occurs considerable water gathers in the mine and our largest pumps can not handle it. The pumps could doubtless take care of the situation if they could be worked continuously. This, however, can not be done as during times that the pumps are most needed it seems that most trouble is experienced with power. In some cases the power is carried over transmission lines for a distance of 25 mi., possibly farther, and if any trouble occurs on the line or the power is off for two or three hours one can readily see how the pumps would be useless. We expect to eliminate this difficulty by the construction of the ditch in question which is known as the Jack Run drainage ditch.

In conclusion, I believe that it pays to eliminate mine pumps and construct ditches wherever possible. I am of the opinion that the question of elimination of mine pumps should be left to the engineer in charge of each mine and that he should be allowed to solve the drainage problem to the best advantage. It seldom occurs that the same solution will answer at all mines and in my opinion all drainage propositions should be considered separately; after all available data is secured the drainage problem should be solved in accordance with the general conditions. It may not always be practical to eliminate mine pumps and in fact it has been found that all pumps can not be done away with but my recommendation is that where possible pumps should be eliminated.

## A Portable Utility Light

A new type of night light for highly localized lighting has recently been placed on the market by the Western Electric Co. This device, which is to be known as the Western Electric portable utility light, is for use at close ranges where the light is to be located at any distance not greater than 125 ft. from the object or surface to be illuminated.

With the light operating on a 100 ft. throw, a 100 ft. spread is obtained at an angle of 60 deg. The unit gives a smooth white light without gleam or glare. This is made possible by



GENERAL VIEW OF  
NEW LIGHT

a new development—the hammered glass reflector. A 200-watt Mazda, Type C lamp is used. The device is of rugged construction throughout and will withstand rough usage in service.

The hammered glass reflector is spring suspended in a one-piece cast-iron housing. The housing is closed by a wire glass front which is fitted into a recessed cast-iron ring. This forms a door which is hinged at the bottom and secured by a hand latch, thus affording easy access to the interior of the housing. The recessing in the ring makes

the interior of the housing fully weather-proof.

The lighting unit can be furnished in either a black or gray weather-proof enamel finish. It is 19¼ in. high and weighs approximately 30 lb. This light weight makes it easy to carry from place to place. The base is 9 in. in diameter, giving the light stability when mounted on a flat horizontal surface. It can also be mounted on either vertical or flat surfaces, such as walls, poles or roofs, by virtue of a heavy universal joint which fastens the housing to the base.

All adjustments can be made by hand—no tools are necessary. This light has a wide range of applications. In railroad work it can be used for lighting transfer tables, coaling stations, inspection pits, loading platforms, cranes, roundhouses, and drawbridges. In marine work it can be employed for lighting docks, dredges, slips, loading operations, canal locks, dry docks and pile drivers. Its industrial applications cover even a wider variety of uses, such as lighting shop yards, material yards, coal yards, well drilling operations, coal tips, erecting shops, machine shops, tramways and inclines, conveyors and all kinds of emergency work.

The following cablegram has been received from American Minister Brand Whitlock at Brussels, dated November 28:

As an example of the rapidity with which Belgium is recovering from the effects of the war, it is a pleasure to report that the production of coal in the Belgian mines, during the month of October, was 98.6 per cent. of the normal production before the war.

# Oxyacetylene Process in Collieries and Shops—II.\*

In addition to the uses for the oxyacetylene torch set forth in the preceding article, it may be and is often employed for other purposes about the mines and shops. In short, this piece of apparatus is a veritable jack of all trades, but the surprising circumstance attending its use is that it is good at each.

By CHARLES C. PHELPS  
New York City

**F**IG. 14 shows a new 15-in. diameter pump plunger which, after machining, was found to have two holes on the surface each about as big as a hickory nut. Formerly it was the practice to dovetail pieces of copper into such cavities, peening them in to a snug fit. The copper filling, would, however, as a rule, work loose in time, because of the corrosive action of the acid mine water, and



FIG. 14. A WELDED PUMP PLUNGER

cause scored cylinders or other damage. The modern practice is to fill up such cavities with the aid of the welding blow-pipe, thus entirely eliminating all traces of the defects.

Fig. 15 shows a washing device suspended above a No. 4 buckwheat shaker screen. The material being screened passes to the left and the streams of water are inclined slightly to the right; that is, they tend to retard the movement of the material on the screen.

The novel feature is the manner in which the slits were cut in the pipe by means of an Oxweld cutting blowpipe. They were cut crosswise on the bottom and slightly inclined to the axis of the pipe. The pipe is 2½ in. in diameter and the slits are about the same length; that is, they extend about one-third around the circumference.

\*Concluding installment of this article. First part appeared in "Coal Age," Dec. 11 and 18, 1919.

It required approximately one-half hour to cut all of these slots, about a dozen in number, by means of the blowpipe. The value of the gases consumed was negligible, probably amounting to less than 25 cents. Four to five hours would have been required to do the same work with a hack saw.

The slits in the front pipe were spaced 6 in. apart, while



FIG. 15. UNIQUE SPRAY PIPE IS MADE

those in the rear one were 12 in. apart. The object of this was to determine which spacing gave the best results.

This application of the blowpipe suggests its use for cutting all sorts of perforations in pipes that might be difficult and expensive to accomplish by drilling and sawing methods, and particularly for emergency applications. The shapes of

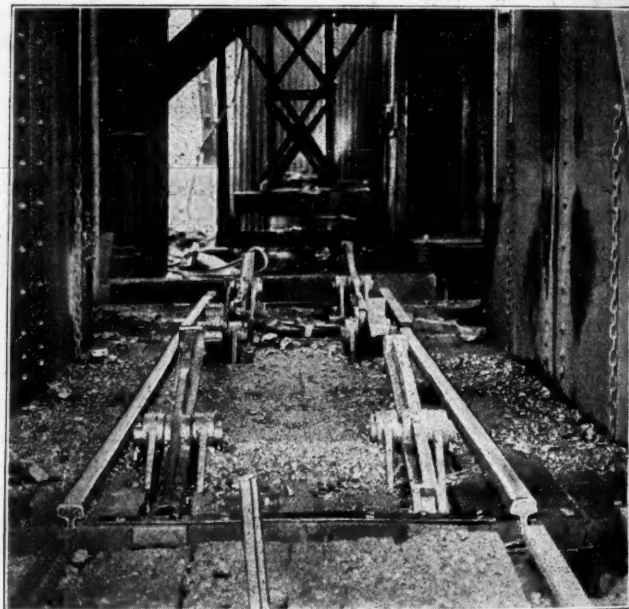


FIG. 16. RAILS CUT ON CAGE

the streams of water in Fig. 15 demonstrate the excellence of the blowpipe as a cutting tool. What slight irregularities there are in the stream forms are largely due to particles deposited from the water. Certain types of damaged or worn screens may be easily repaired by welding in a new metal



patch and cutting holes in it to correspond with the rest of the screen perforations.

#### CUTTING BLOWPIPE AIDS IN CONSTRUCTION

In innumerable instances when erecting new buildings or machinery, or when altering present equipment, the cutting blowpipe is of the greatest service, eliminating much costly shop-fitting work. Fig. 16 shows rails on a cage that were cut in this way saving the time and trouble that would otherwise have been required to send them to the blacksmith shop to be cut. In another case it was desired to cut off two engine crank pins  $4\frac{1}{2}$  in. in diameter. Hours of work, that would have been consumed in removing the crank disc and doing the cutting with machine tools, were saved when the operation was performed in a few minutes with the blowpipe.

When steel beams, columns and partitions interfere with the installation of pipe, belt, shafting, wiring, etc., it is often feasible and quite inexpensive to cut a hole or notch entirely through the obstruction by means of the blowpipe.

In erecting steam and compressed air piping it is often found advisable to weld the sections together, as shown in Figs. 19 and 20. This is not only cheaper in many cases than employing screwed or flanged joints, but it has the additional

around them. The cutting blowpipe was employed for cutting the pipes, hooks, caps and pins and for perforating the pipe frames of the guards where the meshes of the expanded metal were welded.

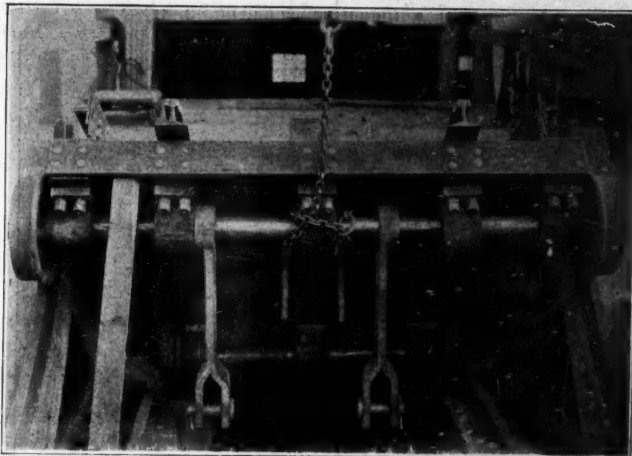


FIG. 18. ANOTHER VIEW OF CUT RAILS

Both welding and cutting blowpipes are used to great advantage in constructing bins, racks and compartments for storing tools and stock. Scrap metal can often be used quite economically by employing the oxyacetylene process.

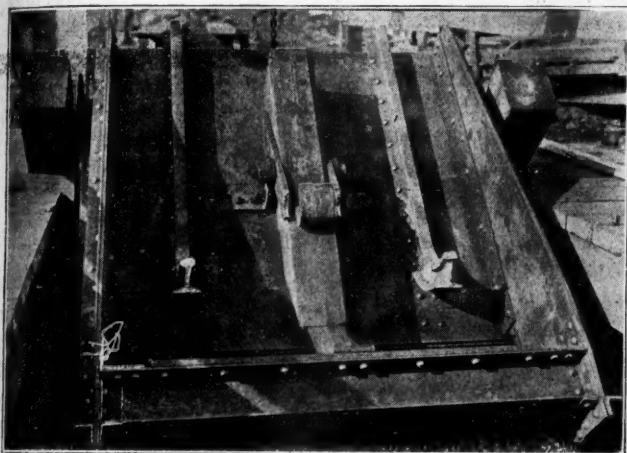


FIG. 17. VIEW OF RAILS AFTER BEING CUT

advantage of eliminating subsequent wasteful leakage and expense for gaskets. It also often simplifies the application of insulating coverings. Where piping must be taken apart at frequent intervals, it may be preferable to leave certain sections with flanged connections, but even in such cases it is often an economy to weld or braze the pipe to the flange, thus minimizing leakage and gasket troubles.

#### MACHINERY GUARDS

Fig. 21 shows extremely simple but effective guards for a grinder, constructed from a few plates of scrap steel. These were cut to shape by means of a cutting blowpipe. The outer plate of each guard was welded to the cylindrical body and the inner plate was bolted on, permitting the guards' easy removal. When such effective guards can be constructed so cheaply, it is an easy matter to properly safeguard every machine of this sort in use.

Fig. 22 shows three fixed guards protecting a heavy belt. Additional removable guards to be inserted between the ones shown were being constructed at the time the photograph was taken. Each guard is constructed of a frame made up of several lengths of  $1\frac{1}{4}$ -in. pipe welded together, and panels consisting of expanded metal lath welded to the pipes. A welder and helper required about 3 days' time to construct and erect the three guards illustrated. The pins and nipples embedded in the concrete floor which serve to hold the stanchions and guards, are held securely by pouring molten lead



FIG. 19. A WELDED PIPE LINE

Sometimes a machine tool or other piece of apparatus must be modified in construction to fit it for performing some operation for which it was not originally designed or to adapt it to a different form of drive. In such cases the welding and



FIG. 20. ANOTHER VIEW OF THE LINE

cutting process is invaluable. Fig. 23 shows how a lathe was converted in this way from direct electric motor drive to belt drive. A support for the cone pulley bearings was constructed from several pieces of  $\frac{3}{8}$ -in. scrap sheet steel.

In order to show how simple it was to construct this support, the method will be outlined. First, the end pieces of the support were cut to suitable height and shape, while the cone pulley was held temporarily in its approximate final position. These end pieces were then clamped in position, while a sheet of heavy paper, such as is used for roofing, was pressed against the end supports and used as a pattern for determining the outlines of the side pieces. The paper pattern was cut to shape and bent to indicate the positions of the upper

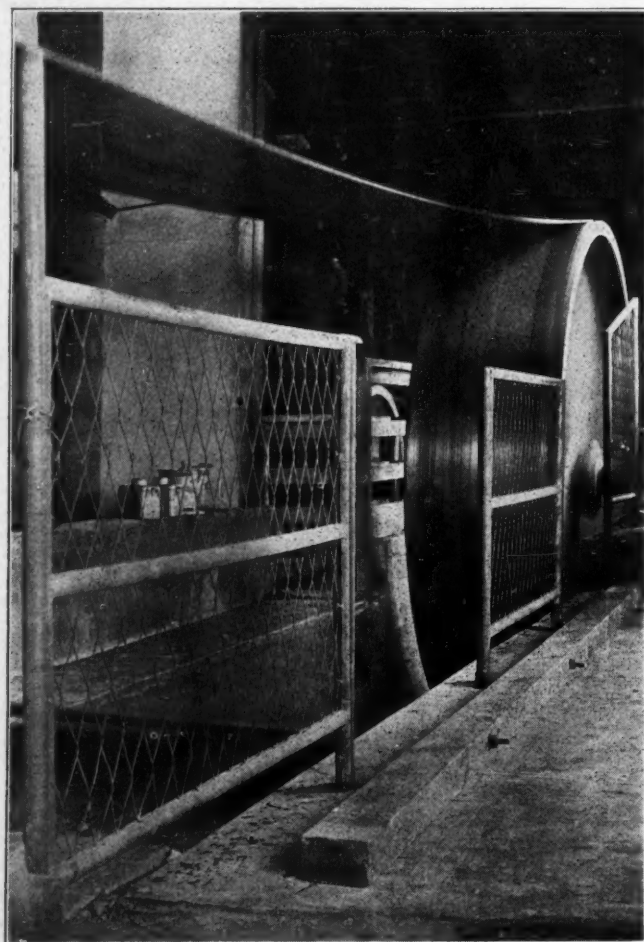


FIG. 22. WELDED PIPE USED AS GUARD

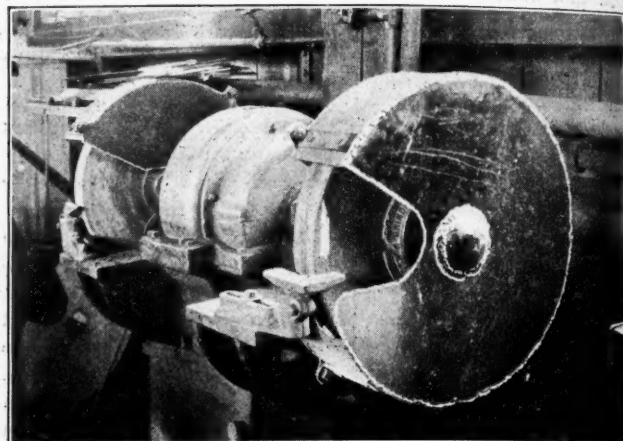


FIG. 21. GUARD CONSTRUCTED FOR GRINDER

and lower flanges; it was also marked to show the location of the bolt holes. With the paper serving as a template, the two sides were marked out and then cut with the cutting blowpipe. They were then sent to the blacksmith, who bent them to conform to the contour of the end pieces. The sides and ends were then oxyacetylene welded at the edges. This completed the support with the exception of the pockets for holding the babbitted bearings on either end. The latter consisted of U-pieces made of sheet steel in which the babbitted bearings were set loosely and secured by means of set

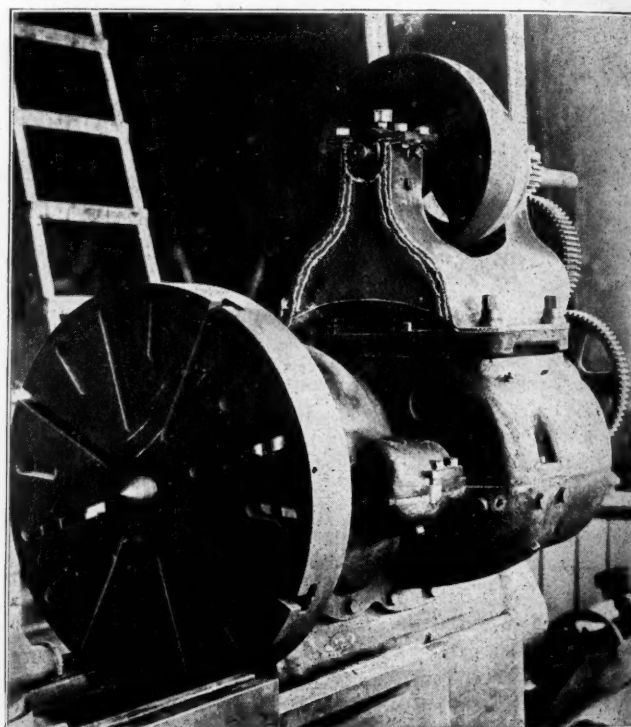


FIG. 23. LATHE DRIVE IS CHANGED

screws. The U-pieces were also welded along their outer and two upper edges.

This article has dealt principally with the equipment of the mine shop and breaker. There are a multitude of equally valuable applications of the process to the repair of the mining equipment proper. In stripping operations the welding and cutting blowpipes are frequently called upon to repair various parts of the steam shovels, such as buckets, bucket points, booms, frames, gears, and levers, which parts break or wear out frequently.



In underground work the drills, undercutters and coal punchers contribute their full share to the work of the oxy-acetylene operator. Electric mine "mules" and steam and electric pumps, piping, rails and electric wire supports are frequently in need of blowpipe repairs. Rails are often bonded by means of the oxyacetylene process and some operators have found that T-rail frogs are made in a more economical manner by means of welding and cutting apparatus than by means of a blacksmith forge and trip hammer.

## Electrical Hazards on Low-Voltage Circuits

By G. E. KIMBALL  
Electrical Inspector

In practically all 110-volt alternating current lighting systems, voltage which is used on the lamp circuit has been reduced through a transformer, the primary side of which is supplied with a much higher voltage. Should the insulation between the high and low voltage sides of the transformer be defective, or should it be destroyed by an abnormally high voltage on the power circuit (which might be caused in many ways) the lighting circuit would then be exposed to the much higher voltage of the primary side of the transformer. It is then that the artificial ground which is required and has been supplied on the secondary circuit is supposed to take care of this abnormal voltage, and to protect the circuit until the condition has been relieved by the blowing of the primary fuses or the "burning out" of the short circuit.

This will explain why one wire of a two-wire lighting circuit will always have a potential to ground, and why, if one comes in contact with this live wire, he will become a part of the electrical circuit to the earth.

In wiring electric lighting circuits, every care should be taken to insure that the live wire is connected to the tip of the lamp, and that the ground side of the circuit is connected to the outside terminal or shell of the lamp. Water is a good conductor of electricity, and where lamp circuits are used in damp places, or over concrete floors in basements, wash houses or any place where exposed grounded or damp surfaces are within reach of the lamp, only heavy, reinforced lamp cord and porcelain or weather-proof lamp receptacles should be used. In wash houses, ceiling fixtures, using pull-chain receptacles with linen cord pendants, or fixtures controlled from wall switches, give the maximum of safety. A brass-shell lamp receptacle is not designed to withstand moisture. A thin insulation of fiber between the current-carrying parts of the receptacles and the outside shell of the lamp does not provide a protection where moisture, steam or vapor are prevalent.

The insulation of the cord being punctured by a fine strand of the conductor, which came in contact with the victim's hand, was recently the cause of a fatal accident where the employee was working on a wet-concrete floor. The man had just completed installing a tank and was inspecting the riveting when the accident happened. The wet concrete floor served as an excellent conductor, completing a circuit of comparatively low resistance. Sufficient current flowed through the body to prove fatal.

In another instance, a boilermaker's helper was killed in the fire box of a locomotive, which was standing on the repair track in a roundhouse. The portable lamp cord he was using was equipped with a brass-shelled socket. A defect in the socket or a breakdown in the insulation caused the brass shell to become charged, which in turn charged the metal lamp guard. The lamp was accidentally brought in contact with the shell of the boiler, grounding the guard

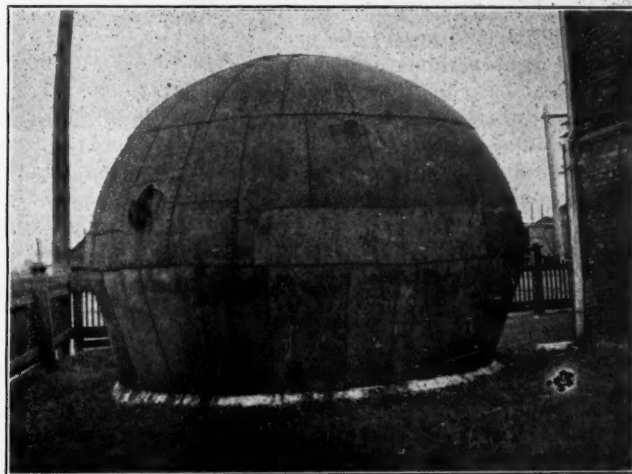
light circuit and blowing a fuse. The boilermaker, who had not yet entered the fire box, went to the fuse cabinet to replace the fuse which was blown. While waiting for the current to be returned to the circuit, the boilermaker's helper in the fire box leaned back against the shell of the boiler, supposedly holding the lamp guard in his hand. When the fuse was replaced in the circuit and the switch closed, the current found its path to the ground through the man's hand, through his body and shirt—which was wet with perspiration—to the shell of the boiler and the track, which of course was grounded. When the boilermaker reached the door of the fire box, he found his helper dead.

## An Interesting Old Boiler

The accompanying illustration shows one of the first steam boilers ever used for power generation in Canada. As will be observed, this is not only an old boiler but is of an old design—one seldom used at all this side of the Atlantic.

As may be seen, this boiler is of the ancient caldron, kettle or "haystack" type with slightly indented bottom. Although the hot gases circulated around the sides of the container, the under side formed the major as well as the most effective portion of the heating surface. The volume of water was large compared to the area exposed to the heat, with the result that it required a long time to get up steam, but the boiler would quickly and effectively respond to momentary overload.

The American in his boiler design has always been partial to the cylindrical container in some form or other. Even in the very earliest types built in this country we find this form



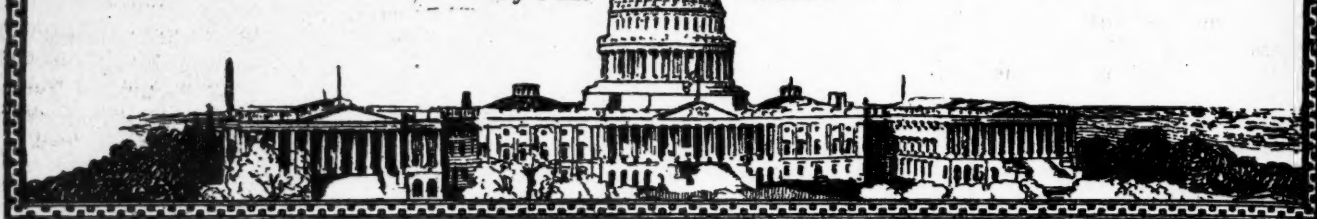
THE BOILER AS IT APPEARS TODAY

almost exclusively. Boilers of the kind here illustrated were, however, quite popular in England in the early days of steam engineering, and many of them found use at the coal mines where they were employed largely for operating the Cornish pumps then in use. Their one strong point appears to have been their simplicity, but this was not strong enough to protect them from the encroachments of the more scientifically designed and more efficient Galloway, Lancashire and Scotch marine steam generators. Even in England this type of boiler is now practically, if not entirely, extinct.

It is believed that the boiler here shown is the only one of its kind now in existence in America. It is carefully preserved as a curiosity by the Nova Scotia Steel & Coal Co., being set on a concrete foundation at one corner of this company's general office in the town of Sydney Mines, Nova Scotia.

# News From the Capitol

By Paul Wooton



## Van H. Manning Submits Important Plans

THREE projects have been submitted by Van H. Manning the Director of the Bureau of Mines, to Harry N. Taylor, the President of the National Coal Association. Summarized, they are: (1) Full time operation of the coal mines through the cooperative action of the Government, operators, miners and transportation agencies. (2) Development of export coal trade through the cooperation of the operators. (3) A National Coal Institute to be organized along the lines of the National Petroleum Institute.

Dr. Manning describes the first plan as follows: There are periods in which the bituminous mines, especially in the spring and summer months, are not at work, from causes not under the control of either the operator or the miner. These unwelcome shut-downs constitute a considerable percentage of the possible working days in the year, and thus seriously affect the gross income of both the miner and the operator, since each suffers a loss whenever the mine stands idle. Unfortunately the roof does not stand idle—it falls and must be timbered, and water enters the mine and must be pumped out. The mines are idle from one-third to one-fourth of the time in ordinary years. The reason is well-known; bituminous mines are opened and manned on the basis of the maximum or winter output, a condition which, in large part, arises because consumers reduce their purchase of coal in the spring and summer months.

### SEASONAL CONCESSIONS TO CONSUMERS

It is, of course, well known that some bituminous coal does not stock well, and although there are ways and means by which this can be done, such coal requires careful storage, and the storing and rehandling costs money. The consumer, however, does not perceive the cost of this to himself. It appears an inconvenience to him to tie up his money so far in advance, and so he does not order coal early in the season. Spring and summer coal purchasing must, therefore, be made worth while to the consumer from a money standpoint. If a business firm using a thousand tons of coal per year could save a thousand dollars by buying early, it is quite probable that it would make its purchases early. A further advantage to this firm would be that, with its supply of coal at hand, it would be independent of conditions, such as winter storms, etc., that might prevent or interfere with the handling and shipping of coal.

Since Congress has enacted laws which operate to prevent price-fixing agreements among operators, it is impossible for them to meet this situation by agreeing to sell their coal for materially less in summer than in winter. It has been suggested, however, that the Government establish summer and winter transportation rates on coal upon a

sliding scale basis that would produce an equalization of coal purchases and shipments through all the months of the year.

The effect of this would be to provide steady work for the miners through a readjustment by which fewer mines could furnish the total amount of coal needed. This would not necessarily mean the shutting-down of mines. Mr. Rice, Chief Mining Engineer of the Bureau of Mines, has estimated that the average annual increase of production and use from 1900 to 1916, inclusive, was eighteen million tons, and that probably five per cent of the shipping mines, or about two hundred mines producing twenty-three million tons, were worked out annually, so that there would be required an average of about four hundred new mines each year to take care of the total increase needed of twenty-three million plus eighteen million, or forty-one million tons.

I am seriously considering propaganda work along the above lines, but I would like to have your frank expression of opinion, as representing the bituminous coal operators, as to the advisability of starting it. I realize the impotence of a federal bureau in making any efforts to establish such a plan for an industry as large as the coal mining industry of this country, but I feel that if we can convince the consuming public of the wisdom of storing coal, we could secure the necessary cooperation of the Government, the operators, the miners, and the transportation agencies. How can this be accomplished?

### DEVELOPMENT OF EXPORT TRADE

For eight months or more I have been urging the forming of an organization to handle export coal. The coal industry of the country would be greatly benefited by a good export business. Coal from the mines distant from seaboard would find a market in the fields that provided coal for the overseas markets. The Canada trade is more or less a domestic business. We have never had a large export coal business, because Great Britain, through its dominant position in shipping, has had the lion's share of the business. But England has, temporarily at least, lost the larger part of its coal export business through curtailment of production, resulting from reduction in the hours of labor of the miners.

The United States coal export trade should be placed by its own great shipping facilities on a firm basis where it can compete on even or better terms because of our more easily and cheaply mined coal. The export business, while at present extremely attractive on account of high prices, has most serious disadvantages for the individual operator because of the problems of arranging for ships, taking care of demurrage, determining the responsibility of purchasers, etc. Certain large operating companies, long established in the export business, are, of course, in better position to meet the situation, but even such companies are deeply concerned in the present situation, because in the



scramble for business, overseas orders have been secured for coal entirely unsuited to the European market, and in certain instances for coal of very bad quality, thus seriously damaging the reputation of American coals.

The Government has wisely put into the hands of the operators, through the Webb-Pomerene Act, an opportunity for handling export business so that operators who export coal can dispose of their coal to the best advantage. It seems to me that coal exportation is more of a banking business than a coal production business, and my experience in following up this question of export trade leads me to believe that it can be financed if we can secure a combination of operators for the purpose. There is a market in Europe estimated at from forty million to one hundred and fifty million tons per year, to say nothing of the possibilities in the South American republics.

#### THE NATIONAL COAL INSTITUTE

I am sending you herewith a copy of the "Plan of Proposed Organization of the Division of Research and Statistics of the American Petroleum Institute," prepared by me as Chairman of the Committee on Improvements in Methods of this Institute. This plan was approved by the Board of Directors at a meeting of the Institute in Colorado Springs, on August 27, 1919. This Institute has no connection with the Government, but it is a national organization. This plan is sent to you with the suggestion that the coal industry consider the matter of the creation of such an organization. This plan is sent to you with the suggestion that the coal industry consider the matter of the creation of such an organization at this time, and that in doing so it give consideration to the question of its organization under a Federal Charter.

### Operators Protest Settlement

In a statement issued Dec. 12 the operators of Central Pennsylvania set forth very clearly their protest to the settlement of the strike. Their statement is as follows:

Settlement of the bituminous coal strike under the plan accepted by the mine workers officials at Indianapolis, is no settlement whatever of principles at stake in the controversy. It is merely a postponement of the showdown which, in our opinion is bound to come.

The miners' strike was in direct violation of a wage contract approved by the government and to continue until April 1, 1920 or until the declaration of peace, if prior to that date. The miners violated that contract. They are left free to violate any other contract they may make to take its place. There is no restraining influence upon them. The public, under the form of settlement adopted, may be subjected again at any time to the discomfort and distress through which it is now passing. Organized labor has the say as to when this shall occur.

The method proposed by Dr. Garfield for settlement of the strike was interfered with by government officials who knew little of the situation. The problem was taken out of his hands. The operators and the public, as a result, have been delivered into the hands of the United Mine Workers of America. The operators in their resolution earnestly protest against this sham settlement of a controversy which will arise again to plague the American people—a controversy which will not down until it is permanently and finally settled.

There can be no dodging of the issue. It will arise again. It must be met. It has not been met by the coal strike settlement and until it is met, the country is at the mercy of organized labor, whose leaders have been congratulated for their patriotism by government officials.

A resolution was later drawn up and passed by the operators, who in accepting the method of settling the wage

controversy state the following: The operators of Central Pennsylvania earnestly protest against the form of the commission and its powers. They demand that a representative commission, similar to that which settled the Anthracite strike in 1902, be appointed and empowered to investigate by public hearings the facts which the American people have a right to know, and the principles upon which depend the future peace and prosperity of this country, and the safety of our democratic institutions.

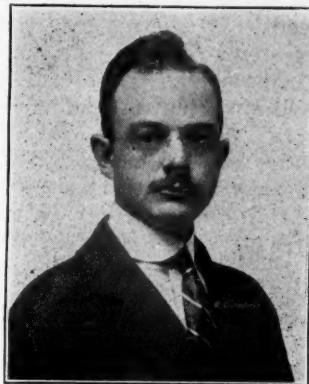
To neglect this duty is to surrender this industry and other basic industries to an overbearing group that has welded coal interests into a weapon for use against American freedom, and the principle of majority-rule upon which this republic was founded.

### C. E. Leshner Leaves the Geological Survey

C. E. Leshner, the geologist in charge of mineral fuels for the United States Geological Survey, has resigned to become statistician for the National Coal Association. Mr. Leshner has been prominently identified with the coal industry since before the war. During the life of the Fuel

Administration, he was in charge of its very extensive statistical division, and prior to that time, he served with the Peabody Coal Committee. During the recent coal strike he was a member of the Railroad Administration's Central Coal Committee.

Mr. Leshner was born in La Junta, Colorado. His technical education was secured at the Colorado School of Mines, from which institution he was graduated in 1908.



Following Mr. Leshner's graduation, he worked as a mining engineer and metallurgist for several companies in British Columbia, Chicago and Buffalo. Nine years ago, he became a member of the United States Geological Survey. Until 1915, he was engaged in land classification work, when he was put in charge of coal statistics. In 1918, he was made head of the Mineral Fuels Division of the Survey.

F. G. Tryon will succeed Mr. Leshner as chief of the division of Mineral Fuels of the Survey.

### Dr. Garfield Resigns

The week ended Dec. 13 saw more spectacular developments in connection with the strike than any week since it began. The climax came late Saturday when Dr. Garfield was summoned before the Frelinghuysen Committee and was forced to confirm the insistent rumors that his resignation was a result of the refusal of the Cabinet to carry into effect the principles which he had laid down.

It is understood that Secretary Lane stood firmly with Dr. Garfield throughout the Cabinet discussion of the matter, but the insistence on the part of Secretaries Baker, Wilson, Daniels and Attorney General Palmer for compromise agreement, which is very generally being called here a surrender to organized labor, could not be overcome and the agreement to leave the matter with a commission consisting of a representative of the operators, of the miners and of the public was made.

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## Luxury Trades and Ours

**W**HEN LUXURIES RISE unduly no one makes any complaint. Any one may profiteer in automobiles, moving pictures, talking machines, silks, satins, linens and diamonds without any federal interference. In fact our legislators are disposed to say: "Let them profiteer all they will. The more the silk mercers, linen merchants and jewelers charge, the more the traffic in their wares will decline. High prices will only make for normal living. Men and women will not be so foolish if prices are allowed to mount without restriction."

But high prices do not discourage the buyer. He or she will give up what are almost necessities to buy himself or herself silken apparel. The higher the price for luxuries the lower the price the buyer is willing and able to pay for actual physical needs. Furthermore higher prices for luxuries mean larger stores to attract the luxurious and, in the newspapers, more luxury trades' advertising and more frequent editorial notice and illustrations relative to fashions.

Thus allowing the profiteering of the trades which cater to our love of finery, these trades are expanded. That is always the outcome of profit in commerce. Other industries proportionately suffer by the activity in the luxury class. There should be one law for trade, but if the sharp sword of restriction is to be used in any business it should be against the "Aphrodites" and not the "Atlases of commerce".

Regulation for the servitors of mankind and freedom, even favor, for those who pander to her sybaritism is undoing the country. The Government let the liquor dealers make all kinds of profit out of whiskey without a word of protest, but it got busy when the price of coal threatened to go up 14 per cent. No one has promised to get after the multitude of profiteers who oppress the poor man every time he tries to purchase what is not a necessity, but a folly.

Let the public get back to a sane point of view. A tax on luxuries brings money to the Government and may do no harm, but profiteering on luxuries feeds and multiplies the profiteers.

## Why Not Explain

**M**OST of the coal operators in this country have either been mine workers themselves or have studied the mining business at close hand. On the other hand, how many of the mine workers have been operators or mine executives? How many have studied cost accounting, coal selling, office management? How many have paid taxes or know what taxes have to be paid? How many tenants own houses or have owned them or managed them for others?

It is easy to see that the operator knows more about the mine worker than the mine worker knows about the operator. In consequence if there is to be an understanding, the mine workers must be informed about the difficulties and expenses of the operator and how he has more than his mine force to pay and more than his

mine troubles to meet. Why not explain the facts to him in posters or by pamphlets? If he takes the wrong view of things, the remedy is simple. Inform him.

The public never sees a mine. A man the other day was explaining how coal that he said cost \$2 to mine was costing him \$7.50 delivered. He had overlooked railroad expense, retail-yard cost and delivery and many other items, among others the fact that he was accepting not the run-of-mine coal but the screened coal which was only a fraction of the whole tonnage. He agreed that it was true that the coal he got was sized coal and not run of mine but was added that if the operator sold the small coal also he must be making about \$12 a ton. He was not an unintelligent man and how he arrived at his false conclusion it is hard to imagine. Evidently he thought the weight at the mine was the weight of the screened coal only, as indeed was formerly the case, or that the operator charged the purchaser with the original weight of the mined coal and extracted without deduction the undesired slack.

Another man wanted to know if the slack coal came from certain mines, and the lump coal from other workings. One would-be operator learned how much the miner got per ton for coal loaded on the car at the face of his room and overlooked all the other costs, except those of management and selling. He learned after a while, at the cost of a million dollars or more, that there were other charges in cost accounting that could not be ignored.

The public is grossly misinformed. Why not explain matters to them? The mine workers and the rest of the people are not so ill-purposed as they are ill-informed. Why not explain?

*Some people insist that the world owes them a living. But they seldom convince this sad old earth of the justice of their claim even after a lifetime of effort.*

## College Graduates Here and Abroad

**L**OUD IS THE CRY that the college man of the country starts with inadequate pay and gets a job only with difficulty. Perhaps it may serve a useful end to show how it goes in Great Britain. There your newly emitted college man is not regarded as sufficiently safe and sane to be entitled to pay. He expects to put himself under a skilled professional man to whom he must pay a certain annual fee as compensation for inducting him into the mysteries of the profession.

The young man from college who pays such a fee tacitly confesses that he had not arrived to years of discretion and a practical knowledge of the work. He is therefore quite a little less bumptious than the American college graduate. He carries his honors more lightly, and, as his mentor is paid for bearing with his crudity of scholarship and with his lack of experience, professional and social, the young cub holds his job even though many exceptions may be taken to his training and behavior.

There are many objections to the British method. No one in the United States would favor its adoption, but standing as it does, it draws attention to the fact that college is but at the threshold of the professional man's career. Some of the young college men view the marble halls of their *alma mater* with too much reverence. They believe they give ripened experience, that they teach what a mixture of thought with hard work can alone indoctrinate.



Professors, perhaps, fail to instruct their charges that much learning refuses to be coaxed to the blackboard, the mine model, and the lecture. The picture of life is not life itself. Only time in the actual practice of a profession can fill with life what has been only outlined in the college course.

*Neatness is an outward sign of inward efficiency. All signs fail in a dry time but when a mine surface plant presents a generally haphazard appearance it is a fairly safe bet that many other conditions in and about the works are anything but ideal.*

### Decline Interest in Public Utilities

A PERIOD APPROACHES when the really productive business world will stand stock still. The railroads which, at one time, absorbed most of the accumulated wealth of the country are no longer being extended or improved. The street railroads are being abandoned. Copper mines are idle for lack of demand from steel railroads, and the prospect of supplying copper for the conversion of steam railroads to electric becomes increasingly remote.

Iron and steel plants only expand because of the demand for automobile steel. No one cares what iron and steel costs because it goes less and less into real utilities. Coal mines suffer because of the lack of demand for coal. There is no longer the growth in demand that the steam and electric railroad development continually fostered. Mayor's committees may sometime get a firm grip on rents and then building will decline. A strangle hold is being put on the gas manufacturers and progress in gas manufacture may eventually be stifled.

No one puts money now into public utilities, because they are not allowed to make any more than a fair profit and are never defended against an unfair loss. The room into which the public utilities are conducted is like that into which a certain pirate drove his victims. It had a ceiling and no floor. The poor manacled creatures could not go up, but every opportunity was given for a drop to perdition.

Imagine a traveling man touring the country endeavoring to float stock for the building of a railroad and assuring those he approached that they would get 6 per cent if the railroad succeeded in attracting trade but that they, of course, must expect, if they couldn't induce people to come into the district or ship goods over the line, to lose all they invested. How many takers would he secure? None.

Yet that is just what we are doing with the railroads today. We are breaking faith with those who constructed them. They promised themselves that the traffic would pay them a big profit if it could be attracted to the line, and they ran the risk with that in view. Now we cut their rates to the quick, sometimes below the possibility of successful operation.

We offered them a chance for their money, a chance that was, in the bulk of instance, disastrous. They took it in the hope that it might perchance furnish them an opportunity to make generous profits. We have let the failures pass unlamented, and the successes have been regulated till there is only a moderate profit or a tremendous loss. The investor has been cheated once. Nowhere can another investor be found to build a road under the old conditions.

The public utilities are dying and development is dead. The public will stand crowding, freezing, starving, idleness, waste of time, discomfort, dirt and danger rather than pay a fair price for any public service, but for

luxuries it has plenty of money to throw away. The girl who will by a \$300 cloak will prove to you that she could not pay 10c more per day for transportation without keen distress. And what is more it's true. The cloak has the dimes corralled for months in advance.

### He Dreams of Peace

CONCURRENT with the coming of the 25th of December will ever be the hanging up of the stocking the night before. It is then that we are privileged to direct our dreams into whatever channels Fancy may choose. The Coal Trade while having had one of the rockiest—if not the superlative itself—years in its history can well lay down on Christmas Eve and know that the coming year cannot bring forth anything that will make his journey more troublesome. In fact the spirit is well expressed in the saying, "There isn't any such thing". This Christmas Eve it is a case of "Everything to gain and Nothing to lose".



*Courtesy of the Retail Coalman*

### DID HE GET A STOCKINGFUL?

Not unlike the one in *Thanatopsis* who wraps the drapery of his couch about him and lies down to thoughts of pleasant dreams, has the Trade approached his hammock as portrayed by the artist. While he has but one thing to be thankful for; that he has survived the year, he fully realizes that he is in for better days and we may assume that Christmas morning found him with more to be thankful for than when he laid down the night before. It would be almost an impossibility to have injected into his life more tumultuous events than he has experienced. No wave of trial and tribulation can dash itself against the bulwarks of his soul more ruthlessly than the one that has preceeded it.



## DISCUSSION *by* READERS

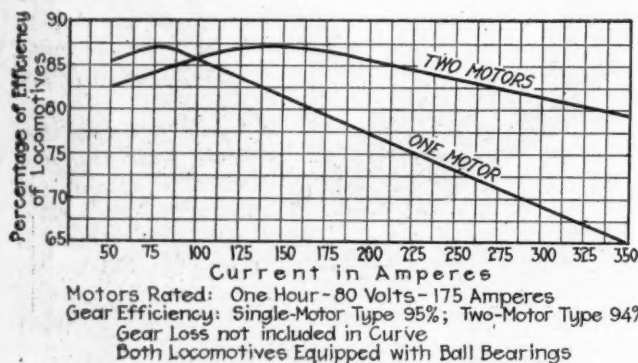
EDITED BY JAMES T. BEARD

### Performance of Storage Battery Mine Locomotives

**Letter No. 1**—In the discussion that has taken place, from time to time, in "Coal Age," regarding the behavior of storage-battery locomotives in mine work, it would seem that some of the chief points of real value to the prospective user of this class of equipment have been ignored by the several writers.

The efficiency of mine locomotives equipped with small motors is very low, particularly when consuming large currents. A comparison of the efficiencies of locomotives equipped with different sizes and capacities of motors will, therefore, be interesting.

The standard practice of the manufacturers of the trolley type of locomotive, of installing 10 hp., per ton weight of locomotive, is essential for the efficient operation of this



#### PERFORMANCE CURVES OF ELECTRIC LOCOMOTIVES

type of machine, and when larger motors are installed a greater efficiency is obtained.

Series motors are used almost exclusively for railway haulage, and these are generally rated at what is called the one-hour rating, on account of the service being intermittent. The efficiency of these motors is maximum at a much lower rating, and this point is called the "normal" or "continuous rating" of the motor.

#### EFFICIENCY DEPENDS ON OPERATION OF MOTORS AT THEIR NORMAL RATING

If a storage-battery locomotive is operated at a point that approximates the normal rating of the motors it will prove highly efficient and, conversely, if operated on overloads the efficiency is very low. This is a point that should be emphasized, and the attention of storage-battery locomotive manufacturers called to it, by the prospective user insisting that the largest motor equipment possible be installed in their locomotives.

The point of maximum efficiency of this type of locomotive being at the one-hour rating of the motors, it is evident that as all vehicle type motors have approximately the same maximum efficiencies, the smaller the motors installed, the point of maximum efficiency of the locomotive will be at the maximum at the smaller loads. Necessity demands, however, that the locomotive be efficient

when it is consuming heavy currents and, this being the case, the locomotive that will perform hard work efficiently will also do work that is easier to perform.

The curves shown in the accompanying figure indicate clearly that the smaller motor equipment is more efficient when operating at a low-current rate, while the larger-motor equipment is most efficient when the locomotive is operated on heavy haulage or on severe grades requiring more current. In other words, the larger the motor equipment, the more efficient the locomotive becomes when the work is difficult.

#### GREATER PERCENTAGE OF SAVING WITH A LARGE CURRENT CONSUMPTION

The saving in current is small when the current rates are small, even if there is a difference in efficiency; but the saving in current is greatest when the current consumption is maximum, if there is any difference in efficiency at all. The curves show that there is a difference in efficiency that should not exist. The motor from which this curve was taken is the largest vehicle-type motor made by the Westinghouse Company and the curve issued by them is used in making this comparison. The errors made in retracing the curve will not vary over one per cent.

The locomotive manufacturer cannot change the performance of the batteries, and must take what the customer prefers; but they can arrange to use these batteries more efficiently, by taking every advantage that is offered, as mentioned above.

Companies have gone to great expense to equip locomotives with ball and roller bearings, and thereby save about one per cent. of the power used. If this will compensate for the extra expense of providing such bearings, how much more would it pay to save ten or fifteen per cent?

Ironton, Ohio.

J. SOMERS.

### Labor and Democracy

**Letter No. 3**—In the discussion of this subject in "Coal Age," remedies have been suggested that appear to have no appreciable effect in stemming the tide of unrest that prevails in the industrial world today. It would seem that where radical conditions exist drastic remedies should be applied, as being the only means at hand to restore normal conditions.

Conservative labor now, as in the past, readily yields to an intelligent, democratic solution of the problems that continually arise in coal mining. This element understands that something cannot be gotten for nothing and they appreciate the difficulties of the situation that, at present, are baffling the public.

An unprejudiced canvass of the labor situation will convince almost anyone that the rational and intelligent element of the labor in this country is in a mood for a constructive solution of the industrial problems that confront the nation. When both the leaders of industry and intelligent labor point the way to an amicable solution of their differences and repudiate the destructive theories that are keeping the situation in the balance, there is hope for



good results. Conservative forces will always accept a solution that is tempered with fairness and justice; and this is probably true, also, of the radical forces, to a considerable extent, although some force and discipline may be required to bring them in line and compel them to listen to reason.

#### OPEN VERSUS CLOSED SHOP

There is but one democratic idea, regarding labor, that ever has or ever will stand the test, and that is, the open shop. The open shop raises labor above the mere level of a machine, and gives it the dignity that it should enjoy. It stands for those principles of the Constitution of our country that distinguish labor here from the poorly paid and poorly appreciated labor of many foreign countries. The open shop is the most democratic institution that can be created. Where adopted, it has never failed to promote efficiency, increase earnings and establish a closer relation between employer and employee. It has enabled ambitious workers to realize their ambitions.

Speaking of bonuses, profit-sharing plans and similar attempts to bridge the chasm between capital and labor, it can be said that where any or all of these are scientifically applied, the result is to increase the efficiency of the open-shop plan, while they only serve to aggravate the difficulties of the closed shop. In the open shop, a man's earnings are readily measured by his ability to perform, which is the fair and only democratic method of adjusting industrial relations. The plan enables the employer to pay higher wages to the man who makes good, and sets no limit on the possibilities of the worker.

On the other hand, the closed shop is based on principles that are opposed to democracy; it puts a crimp in a man's ambition. The earning capacity of a capable and intelligent worker is restricted by a certain standard of wages, which is arbitrarily fixed by the union dominating the industry that permits it, and earnings can only be increased through the siege of long and unprofitable strikes.

I recall working in a shop where \$2 was considered a good day's wage, although a few of the men employed there received \$3, \$3.50 and \$4 a day, because of their greater skill and ability. Wages were increased voluntarily and based on the merit of the individual worker. It was nobody's fault that a man was incapable of earning more than \$1.50 or 2 a day but he alone was to blame or it was his misfortune. A man who proved naturally inefficient was replaced by another man and given the opportunity of making good at some other job. The plan made every man the architect of his own fortune.

#### WHAT THE CLOSED SHOP MEANS TO THE HONEST WORKMAN

In strong contrast with this condition, the closed shop destroys individuality, crushes ambition in the workmen, all of whom are reduced to the same level of dependence on the union, which is expected to accomplish what the man's own initiative should bring about. The closed shop imposes its own inexorable will upon the members in a manner undreamed of from bosses. The prejudice of a committee will often cause a man's discharge or make it so hot for him that he is glad to quit of his own free will.

In the closed-shop plan, the worker is not his own master. He is not free to express himself if his thoughts are opposed to the ethics of the leaders. The very atmosphere of the shop breathes fear and distrust in the worker, who is ever in danger of offending the autocrats of the union. A man who is a bad worker but a good member is all right; but a good worker who is an indifferent member needs to watch his step, as the eyes of the committee are always turned his way. His very life is apt to be made miserable, until he leaves the employ of the company, or commits a

breach that gives the committee the longed-for opportunity of recommending his discharge.

Should the company discharge a worthless, inefficient worker; or should they refuse to discharge an employee who has given offense to the committee, a strike is almost sure to follow. A company is frequently compelled to pay a poor and inefficient worker a stipulated wage when it would be more profitable to pay him the same amount to keep away from the plant altogether.

In closing, let me say that when good American workmen shall have awakened to the readjustment of our industrial chaos, and the open shop shall have come into its own once more, then there will be better cooperation between employer and employed and the labor problem will be solved.

Thomas, W. Va.

LOYAL WORKER.

### Finding a Mine Door Set Open

Letter No. 13—The question of finding a mine door open when the fireboss starts to make the examination of a mine is an important one, especially under the conditions that have been described by Richard Bowen, "Coal Age", Sept. 11, p. 462, where a feeder is said to be burning in Chamber 5 and gas accumulated in Chamber 2.

It has been a hard and fast rule with me, in all my experience as fireboss, whenever a door is found standing open whereby the ventilation is cut off from the section of the mine to be examined, to leave the door in the position in which it was found until a hurried examination can be made of every place in that section. If everything is all right I would then return and close the door.

On the other hand, if a condition is found similar to that described by Mr. Bowen, I would certainly leave the door open and at once place a danger signal at the mouth of the section to prevent anyone from entering the place. Having done this, I would proceed to put out the fire, taking every precaution not to disturb the ventilating current until the feeder was extinguished and an inspection had been made of the remaining portion of the section to satisfy myself that it would be safe to close the door.

Then, returning and closing the door, I would wait a sufficient time for the restored ventilation to sweep away the gas accumulated in Chamber 2, and permit no one to enter until this was accomplished and the entire section examined again.

#### STARTING THE EXAMINATIONS ON THE RETURN

With Mr. Bowen, I believe that the majority of firebosses are governed by geological conditions, in respect to the choice of starting the examination at the intake or the return end of their section. I am much inclined to favor commencing at the return end, for several reasons.

In the first place, beginning at the return end and finding a door open at any point of the section, the fireboss knows it is safe to close the door at once, as he has just examined that portion of the section. Second, I believe a fireboss can tell quicker when anything is wrong if he is traveling against the current, and have a better idea of the quantity of air in circulation. Of course, if a main door controlling an entire section is open, no air will be traveling and the fireboss would then proceed at once to the intake end to ascertain the cause of the trouble. Third, if the mine is warm a fireboss traveling against the air keeps cooler and does not find himself bathed in perspiration when he has finished his run. There are other reasons I could mention, but these will suffice to show the advantage of starting at the return end when examining a mine.

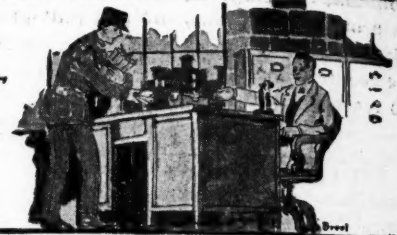
Forty Fort, Penn.

ROBERT THOMAS.



## INQUIRIES OF GENERAL INTEREST

ANSWERED BY JAMES T. BEARD



### Electric Lighting Equipment

We are considering a proposition to supply our small town with electric light, and are desirous of ascertaining if the following equipment, which we have on hand, will be sufficient to do the work. I should like to ask how many incandescent lamps can be operated without going to the expense of securing further equipment.

There is an upright cylindrical boiler 36 in. in diameter with seventy-two  $1\frac{1}{2}$ -in. flues, 6 ft. long. The grate bars are 24 in. below the bottom of the flues and draft is supplied by a 25-ft. stack. A 25-hp. upright steam engine is located within 30 ft. of the boiler. The electrical equipment consists of one Crocker & Wheeler motor, 230 volt, 20 hp. The pinion on the engine shaft is 13.732 in. in diameter, while that on the motor shaft is 3.797 in. in diameter. The motor is run with a silent chain 5 ft. 5 in. long.

GEORGE CAIN, SUPT.

Orme, Tenn.

Battle Creek Coal & Coke Co.

It is only possible to give a very approximate estimate of the number of incandescent lamps that can be operated by the use of the equipment described. The necessary data are wanting that would enable anything like accurate information of the horsepower of the upright boiler. Judging from practical experience, a 36-in. upright boiler, containing 72  $1\frac{1}{2}$ -in. flues, 6 ft. long, might develop, say 15 hp.

Assuming, however, a circular grate 30 in. in diameter, having an area of 4.91 sq. ft., and basing the calculation on a height of stack of 25 ft. above the grate, the calculated draft available for burning the coal is

$$\text{Draft} = 0.8 K = 0.8 \times 0.0075 \times 25 = 0.15 \text{ in. water}$$

Then, with a draft indicated by 0.15 in. water gage, it may be assumed that the maximum combustion rate of Tennessee coal will approximate 14 lb. per sq. ft. of grate area, per hour, or  $14 \times 4.91 = 68.74$  lb. of coal burned in this furnace per hour. Then, taking the average heating value of Tennessee coal as 13,800 B. t. u., and assuming a boiler efficiency of say 50 per cent, since 1 boiler horsepower is defined as the equivalent evaporation of 34.5 lb. of water per hour (from and at 212 deg. F., and the latent heat of evaporation is 970.4 B. t. u., the equivalent of a boiler horsepower is the absorption of  $34.5 \times 970.4 = 33,478$  B. t. u. per hour, and the horsepower this boiler should develop in burning this coal under the given conditions is

$$68.74 \times 13,800 \times 0.5 = 14.16 \text{ boiler-horsepower}$$

$$33,478$$

But, for a feed-water temperature of, say 60 deg. F., and a gage pressure of 100 lbs. per sq. in., the factor of evaporation is 1.198, which makes the steaming rate of this boiler, under these conditions,

$$14.16 \times 34.5 = 408 \text{ lbs. per hr.}$$

$$1.198$$

Now, assuming the water rate of the engine as 35 lb. per indicated horsepower-hour, we find the indicated horsepower available for driving the generator  $408 \div 35 =$  say 12 i. hp. Taking the mechanical efficiency of the engine as 90 per cent and that of the generator as 80 percent, the

combined efficiency is  $0.8 \times 0.90 = 72$  per cent, and the output of the generator is equal to  $0.72 \times 12 \times 0.746 = 6.445$  kw. At a pressure of 230 volts, the current would be  $6445 \div 230 = 28$  amp.

Finally, using the 100-watt lamps, the number of such lamps that it would be possible to operate with this equipment, under the assumed conditions is  $6445 \div 100 = 64$  lamps, excepting line losses, for the calculation of which no data are available.

### Coal Seams, Connellsville District

Kindly give the relative positions of the different coal seams worked in this district, together with an idea of their average thickness.

Connellsville, Penn.

THOMAS MOORE.


The most important of the coal seams of the Connellsville district is the Pittsburgh coal, having a thickness of 8 ft. This seam is generally taken as a basis in describing the coal measures of that region. The upper productive measures include the Red Stone, lying from 50 to 80 ft. above the Pittsburgh coal and having an average thickness of from 3 to 4 ft. About 125 ft. above this is the Sewickley seam, average thickness of 2 to 3 ft.; again, from 150 to 170 ft. higher up is the Uniontown seam, thickness generally less than 3 ft.

The lower productive measures include the Upper Freeport, which is the thickest of the lower coal ranging from 3 to 7 ft. in thickness and lying about 600 ft. below the Pittsburgh seam. The coal is only of fair quality. About 200 ft. lower down is a seam known as the Lower Kittanning, which is irregular and has a thickness of from 2 to 4 ft. The Brookville-Clarion, lying from 50 to 75 ft. below, is generally thin and unimportant.


More detailed information regarding the relations, thickness and quality of the coal seams in the Connellsville district are to be found in the Brownsville-Connellsville Folio of the United States Geological Survey, available in most reference libraries.

Owing to the necessity of sending "Coal Age" copy out of town for publication, during the confusion contingent upon the printers' strike, numerous irregularities will have been observed in the appearance of the magazine and particularly in the matter prepared for the Discussion and Inquiry Departments. It has been impossible for the editor of these departments to see the proof or avoid numerous errors that have occurred and which could not be prevented under the existing conditions. In several instances, cuts have been unavoidably omitted from letters when much needed to make clear the meaning of the writer of the letter. Although these cuts were prepared and ready at the time the copy was set up, they were overlooked in the conclusion of getting out the delayed issues. It is earnestly, however, hoped that these conditions will not long prevail.





# EXAMINATION QUESTIONS



ANSWERED BY  
JAMES T. BEARD

## Anthracite Foremans' Examination, Carbondale, Penn., May 6, 1919

(Selected Questions)

**Ques.**—There are 100 persons employed in a mine classed as gaseous, in one split or current of air. The velocity of the air current is 900 ft. per min. and the sectional area of the airway is 90 sq. ft. (a) Do the above conditions conform with the mine law? (b) If not, explain fully the part or part of the mine law that is not complied with.

**Ans.**—(a) Assuming the given velocity is an average for the entire section of the airway, the quantity of air in circulation is  $900 \times 90 = 81,000$  cu. ft. per min., which allows 810 cu. ft. for each person employed in the split of air mentioned. The Anthracite Mine Law (Art. 10, Sec. 3) provides for a minimum quantity of air of 200 cu. ft. per min. for each person employed in the mine and as much more as the circumstances may require. Therefore, as far as the quantity of air supplied is concerned, it is within the requirements of the law.

However, the law states further (Sec. 7): In no case, in mines generating explosive gases shall the velocity exceed 450 lineal ft. per min. In this regard, therefore, the law is violated since the velocity is given as 900 ft. per min., in this airway or split. Again, (Sec. 6) the law limits the number of persons employed in a single split of air and provides that not more than 75 persons shall be employed at the same time in any one current or split. In this respect, also, the law is violated by the employment of 100 men in a single split.

**Ques.**—Find the quantity of air passing per minute in an airway 14 ft. 6 in. by 6 ft. 9 in. when the anemometer registers 542 r. p. m.

**Ans.**—The sectional area of this airway is  $14.5 \times 6.75 = 97.875$  sq. ft. Then, assuming that the reading of the anemometer is an average reading for the entire section of the airway, the quantity of air in circulation is  $542 \times 97.875 = 53,048 +$  cu. ft. per min.

**Ques.**—State the duties imposed by the mine law on the mine foreman that cannot be delegated to others.

**Ans.**—This question probably refers to the provision of the Anthracite Mine Law (Art. 12, Rule 3), which gives the mine foreman charge of all matters pertaining to ventilation, stating that the speed of the ventilators shall be particularly under his charge and direction; and any superintendent who shall cause the mine foreman to disregard the provisions of this act shall be amenable in the same manner as the mine foreman.

**Ques.**—Explain the proper method of thawing dynamite cartridges.

**Ans.**—Dynamite, when frozen, is dangerous, and cannot be used until it is thawed, which requires the utmost caution. The thawing must be done gradually at a low temperature. Dynamite freezes at a temperature of about 45 deg. F. In its frozen condition, the explosive should not be cut or broken, but must be handled with the utmost caution. The frozen explosive loses much of its force and, if used in that condition, the explosion is only partial.

When frozen, dynamite should never be thawed by exposing it before a fire, or by placing it on a shovel for heating, or holding it over the flame of a candle. Neither should it be immersed in hot water, as the water is liable to cause the nitroglycerin to ooze out from the cartridge. When dynamite is to be thawed in large quantities, for daily use in a large mine, a special thawing room should be provided in a dugout or other isolated place. The room should be provided with shelves on which the sticks of frozen dynamite are placed. The room should be heated with a small steam coil and the temperature closely watched to see that it does not exceed 75 or 80 deg.

A simple and safe method of thawing small quantities of dynamite is to place it between layers of fresh manure in a box. This will supply sufficient heat for the purpose. Another method for thawing small quantities is to place the sticks of the frozen explosive in a suitable vessel or container that is immersed in another vessel containing water, which is kept at a low temperature sufficient for the thawing.

**Ques.**—Is it necessary to tamp holes charged with dynamite and, if so, how would you do this with the greatest degree of safety and obtain the best results?

**Ans.**—Owing to the fact that the detonation of dynamite is instantaneous and the force of the explosion is radiated equally in all directions from the charge, the tamping of a hole charged with dynamite is unnecessary, except to hold the charge in position at the bottom of the hole. For this purpose, a small wad of soft clay can be inserted in the hole, after the charge is forced home. In general, the tamping of a hole charged with dynamite is considered of little importance.

**Ques.**—Find the number of square feet of rubbing surface in an airway 4 ft. high, 9 ft. wide and 1000 ft. long.

**Ans.**—The perimeter of this airway is  $2(4+9)=26$  ft.; and its rubbing surface is, therefore,  $1000 \times 26 = 26,000$  sq. ft.

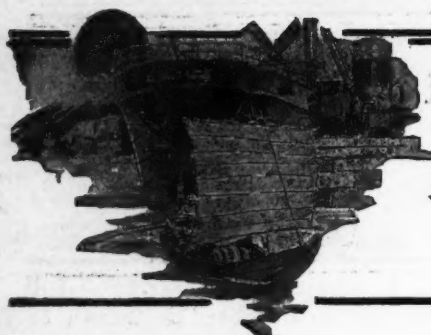
**Ques.**—The course of a heading is due east. A counter is driven off the heading in a direction N 30° E, and the chambers are driven on a course of N 10 W. (a) What is the angle between the chambers and the counter? (b) What is the angle between the chambers and the heading?

**Ans.**—(a) The angle between the counter and the chambers is found by adding the northeast course of the counter to the northwest course of the chambers, which makes this included angle 40 deg.

(b) The angle between the chambers and the heading driven due east is found by adding the northwest course of the chambers to the 90 deg. in the northeast quadrant, which gives, for the required angle, 100 deg.

**Ques.**—When the fireboss reports in the record book certain dangers that he has discovered during his examination, what is your duty as mine foreman?

**Ans.**—It is the duty of the mine foreman to examine carefully the fireboss' report each day and to sign that report as evidence that he is acquainted with it and has a knowledge of any dangers that are reported as having been discovered by the fireboss in his examination in the morning.



## FOREIGN MARKETS AND EXPORT NEWS



### Market for American Coal in Argentina Social Unrest in Argentina at the Present Time is Not Con- ducive for a Heavy Demand of Coal. The Future will likely see a Brisk Competition between Coal and Fuel Oil

This subject will have to be considered both in its relation to the present conditions governing the market for coal in the Argentine and what may ultimately be the conditions to be met with once business has resumed its normal trend abroad and in the industrial life of the republic.

At the present time, due to the social unrest in Argentina and the semi-paralization of manufacturing and industrial centres, the demand for coal is very limited. Along the Riachuelo River where are located many of the large manufacturing concerns of Buenos Aires, the partial shut-down of the factories has reduced the consumption of coal to less than one-tenth the normal demand. Firms accustomed to consuming 5,000 tons a month are satisfied with 250 tons, while others which formerly had standing orders for 1,000 tons per month, are taking from 30 to 40 tons.

On the railroads, which are mostly British owned, during the war when coal was unobtainable, local hardwoods were substituted with fairly satisfactory results and while now one is beginning to see supplies of Cardiff coal on these roads, the consumption of quebracho logs as fuel continues to be an important industry, a condition that is likely to exist so long as ocean freights remain at high level and the cost of coal production what it is. A recent price for hardwood delivered within the city limits was \$22.00 gold per ton. Even with cheaper coal, until the country begins to solve the many labor troubles and confidence is restored, the demand for foreign importations of coal, is not likely to increase.

The visible supply of coal on hand at the present time does not exceed 5,000 tons in the coal yards of the city. This does not include some 30,000 tons of bunker coal held for account of a foreign government by a certain well-known coaling firm, but notwithstanding this fact, so limited is the demand that a dealer in American coal customarily carrying large deposits in stock and with 5 steamers en route, has not hesitated to sell three of these cargoes and will keep only two cargo lots on arrival to replenish his stores.

As previous to the war the monthly consumption and importation of coal was estimated at 300,000 tons, the falling off of the demand is evident and this at a time when the need for this product usually is greatest at the beginning of the Argentine winter.

During the years 1917 and 1918 the consumption amounted to 60,000 to 70,000 tons, the gap being filled with crude oil, local and imported, hardwoods and even corn and linseed oil cake used as substitutes.

With coal at \$25.00 gold a ton, a sale of fuel oil was effected recently at \$20.00 gold per ton, to compete coal would have to have sold at \$15.00 per ton. The possibilities of crude oil becoming in the near future a serious competitor for coal in the Argentine market, once trade conditions become normal should not be overlooked. There are those who have made a serious study of this point and who are of the opinion that within three years liquid fuel will have practically supplanted coal in the Argentine except for limited consumption and it is predicted that this will prove a more serious competitor for American coal than the Welsh product which heretofore controlled the market.

Objections to American Coal compared with British product are said to be due largely to ignorance of the methods of firing and the difficulty of forcing new methods of stoking upon Spanish firemen long accustomed to handling British coal.

American coal, due to the exigencies of the war, found a ready sale notwithstanding local prejudice and claims of inferiority to Cardiff in a market jealous of its former monopoly. One large American firm of coal mine owners foreseeing the coming coal shortage and recognizing the possibilities for introducing their product, sent experts to Buenos Aires to investigate the field and later on establish large "barracas" or yards to which they brought quantities of American coal which they proceeded to offer to the trade. Ordinarily this would have been taking chances, but the move was justified by war conditions at that time, with the result that the product of this particular concern is now well established.

It will be seen therefore that study of conditions by parties interested is necessary with the probability of having to invest considerable capital and engage in the educational work before establishing a market for their product.

Coal is sold in current account, which means that bills are not presented for 30 days with an additional 15 days before payment may be expected, this in addition to the 30 days consumed on the voyage, so that it is evident that considerable capital is required to finance a business of this nature.

Present prices of coal delivered at warehouse within city limits are:

(\$1 Arg. Gold = 96½ cents U. S.)	
Steam coal	\$32.00 Arg. gold per ton
Domestic coal	42.00 Arg. gold per ton
Smithy	42.00 Arg. gold per ton
Anthracite coal	48.00 Arg. coal per ton
Foundry coal	50.00 Arg. gold per ton

Business is done almost entirely through local representatives of foreign concerns, most of whom carry stocks, principally on consignment. Owing to the prevailing scarcity, some direct orders have been placed with American concerns, but the normal trade is carried out by the representatives carrying stock here.

The average stocks carried amount to:—

2/3000 tons of Steam coal
1000 tons of Domestic coal
500 tons of Smithy coal
500 tons of Foundry coke
500 tons of Anthracite

### Coal Trade of Italy

Small amounts of coal are produced in Italy, but none that is suitable for a steamship fuel. Italy, therefore, is dependent on foreign coal for its extensive bunker trade. The main reliance is British coal, but imports of American bituminous increased very rapidly during the first years of the war, as the following table indicates:—

Fiscal Year.	Long Tons.
1914	776,422
1915	1,328,279
1916	2,797,506
1917	1,099,508
1918	201,220

The imports of coal from Great Britain in recent years were as follows:—

Year	Long Tons.
1913	9,017,570
1914	9,113,700
1915	5,409,934
1916	5,422,949
1917	4,068,340
1918	4,054,000

The effect of the increasing shortage of shipping upon the shipment of coal to Italy is clearly indicated in the foregoing tables.

German coal was supplied in small quantities at the larger coaling stations of this region before the war.

Naples is the chief bunkering port of Italy. The amount of bunker coal normally available ranges from 35,000 to 50,000 tons. The stock includes the leading British and American grades and is handled by British and Italian firms, among the former being Cory Bros. and Co., Ltd., of London. Bunkering is conducted rapidly, either from the docks or from barges, and large passenger lines have taken aboard as much as 800 tons per hour. The bunker trade of Naples amounted to over a million tons in 1913 and to 882,000 tons in 1914.

Genoa, though more important commercially than Naples, ranks below it as a coaling port. Before the war the stocks of bunker coal on hand were very large—approximately 250,000 tons—but much of this was the property of the steamship lines serving the port. By November 14, 1916, the stocks had dwindled to 80,000 tons. The usual British grades—Cardiff, Monmouthshire and Durham—and smaller quantities of American grades—Pocahontas, New River and Georges Creek—are carried in stock. The chief exporter of American coal to Italy is the Consolidation Coal Co. The principal British dealer is Cory Bros. and Co., Ltd.

### Spanish Coal Trade

There are large coal-bearing areas in Spain, but their development has been so backward that their yield is insufficient for domestic consumption. The production of bituminous coal since 1913 has been as follows:—

Year	Long Tons.
1913	3,783,214
1914	3,905,080
1915	4,136,000
1916	4,547,475
1917	5,024,766

About one-half of the output of bituminous coal is mined in the province of Asturias, in the north-western part of Spain, on the Bay of Biscay. The Asturian coal is of varying quality, some being well suited for steamship fuel, but practically all the bunker coal is imported.

Before the war the imported coal was mainly British and ranged from two and a half to three million tons per year. The Spanish Government sought to encourage domestic production by offering a bounty equivalent to 54 cents per ton on the domestic coal shipped to Spanish ports, but this appears to have had little or no effect.

When the war checked transportation from Great Britain the import duty and transportation tax on foreign coal was removed, and American coal began to enter the Spanish market in increasing amounts. The exports of bituminous coal from the United States to Spain since 1914 have been as follows:—

Fiscal Year.	Long Tons.
1914	42,875
1915	100,547
1916	159,758
1917	209,712
1918	44,440

Within the limits of this trade region are included such important coaling stations as Fayal and St. Michael's, in the Azores, Las Palmas, Lisbon, Gibraltar and Barcelona. At all these stations British coal is used and is generally in the hands of British dealers. Before the war the largest dealer in bunker coal in Spain was the Anglo-Spanish Coaling Co., Ltd., of Cardiff. As only Spanish concerns are allowed to deposit supplies of coal in Spanish ports in bond, this company operates through a subsidiary corporation, the Compania General de Carbones, with its head office in Barcelona. This company maintains coaling facilities at Bilbao, Barcelona, Cadix, Cartagena, Corunna, Corunna, Pasages, Santander Valencia and Vigo.



## America's Record Exports

Returns as to America's coal export trade show that for the first eight months of this year a new record has been created. In that period the overseas coal shipments were greater than the total yearly shipments of any previous year. Exports to Canada, Cuba, and Mexico are omitted from these returns, as in such countries the United States has always been predominant as a coal exporter by reason of geographical nearness. In September of this year over one and a quarter million tons of American coal were shipped overseas, the approximate average annual exports before the war being about half a million tons, not including Canada. It will be seen that notwithstanding the troubles America has encountered with respect to her coal trade she is gradually assuming a dominant position in the world's markets. Owing to the inability of this country to export greater quantities large orders have been received from France, Italy, Spain, Portugal, and Scandinavia, and there is every indication of shipments to these countries being maintained. It can be said that the United States has never yet produced coal to the maximum of its ability. When the present labour troubles are over it is quite possible that the United States will settle down and increase its output by millions of tons per annum. The country, too, now possesses the necessary ships without leaning upon this or any other nation. South America, to which country some millions of tons of British coals were annually exported, lies within her grasp. Depots are being established all over the world, and when British outputs increase and more normal times arrive it is inevitable that the United States will be enabled to permanently maintain a large slice of the overseas coal trade which at one time was exclusively supplied by Great Britain. The poor outputs which have resulted from the agitation of colliery workers has meant the loss of millions of pounds to this country—a loss which could well have been avoided if the colliery workmen chose to have avoided it. Our overseas coal trade, too, has been permanently impaired by our inability to adequately supply our foreign customers.

## London Coal Trade

The London Market has been better supplied during the week, says the "Colliery Guardian" of Nov. 27, 1919, but there is still a pronounced shortage. The all-absorbing question has been the alarming announcement of the decrease of 10s. per ton in all household qualities from Monday next, Dec. 1. The decision to reduce all house coal prices came upon the few traders who were assembled late on the market, on Monday last as a bombshell. The news did not reach the Exchange until very late and comparatively few were present when the telegram arrived from the House of Commons.

During the earlier part of the market on Monday, there was a fairly large attendance and buyers were keenly alert for any opportunities of picking up any coal that may be offering as all the merchants look upon the situation for the coming winter as being very serious, but the moment the announcement of the proposed reduction was made, the whole aspect changed and everyone seemed anxious to cancel all orders on hand or at any rate to hold them over until Dec. 1. The Metropolitan area has had a fairly liberal allocation of coal, largely at the expense of other districts. The bulk of the merchants have been compelled to put winter stocks on the ground, and although an appeal was made to the Controller during the bitterly cold weather in October, to pick up certain of the stocks to fulfill the pressing needs of the public orders, this was rigorously refused until after Christmas, and now with all the coal on hand, and paid for at the higher prices an enforced loss of 10s. per ton is brought to bear upon all the traders, unless some compensation is allowed both for coal in stock and in transit during the current week.

## The Liverpool Market

During the past week the steam coal market has witnessed some changes, for the reduction of 10s per ton of household coal, commencing last Monday, has had the remarkable effect amongst other things, of putting up prices in the steam coal business. The price of best South Wales Admiralty coals has increased by an almost like amount as is shown in the reduction of house fuel. One well-known coal contractor, reviewing the situation and the anomalies resulting, said "it's a question of shuffling. What is lost

on the swings is made up on the roundabouts." And in this way no doubt the loss of house coal will be recovered on the steam coal. As the latter consumption is much greater than the former, it is easy to see that an adjustment is possible and comparatively simple.

In Cardiff prices are soaring, and 110s and even more is now being asked for South Wales bunkers, two-thirds large and one-third small. This has had an effect upon "local" coal prices, and it is believed these will rise correspondingly, though the increase has not so far reached the limit of the South Wales rise. Coal is difficult to obtain at time of writing, and the steaming of craft at Cardiff, etc., against charterers. Owing to the action of the American authorities the ships employed on the Atlantic trade are requiring more coal to complete the return trip. America looks after her own flag, and the hint might well be taken by our own Government during times of stress. Comparisons have been made between America's policy and that invariably followed by our own authorities.

## Scotland Coal Market

Business in the west of Scotland coal trade continues on the usual lines from a statement made in a recent issue of "Colliery Guardian," and a little alteration is noticeable. Outputs perhaps, appear to be increasing a little and everything at present points to a steady trade throughout the winter months. Domestic demands have been particularly pressing, and with such keen weather as was experienced some days ago, the rationing allowance is most inadequate. Industrial requirements are steadily maintained and the situation has been improved by the restart at the steelworks. Exports continue on much the same level and greater facility in the granting of licences and a better supply of carrying tonnage are very necessary. A little more foreign business has been done, but the bulk of this trade is still coastwise. The shipments for the past week amounted to 96,187 tons, against 88,601 in the preceding week, and 72,703 tons in the same week last year.

Collieries in the Lothians are doing a steady local turnover. While neutral tonnage is more frequent on the east coast than on the west of Scotland, the foreign shipments only aggregate about one-third of the returns for the week which amount to 29,349 tons against 28,583 in the preceding week and 14,154 tons in the same week last year. Now and then, however collieries in this district have been able to fix remunerative consignments to neutrals. Much similar conditions pertain in the Fifeshire district, only to a greater degree. Clearances are a good average for the year, but foreign shipments only amount to just over 6,000 tons, or an aggregate for the week of 46,064 tons, against 41,602 in the preceding week and 20,810 in the same week last year.

The aggregate shipments from Scottish ports during the past week amounted to 171,600 tons.

## Irish Coal Trade

Although the severe weather has moderated, merchants continue to be busily engaged, and so far there is no further change in prices at Dublin. Supplies are somewhat better and stocks are improving, but heavy storms have interfered with the arrival of steam colliers for the past week. Quotations range from 54s. 6d. per ton for standard coal to 62s. 6d. and 63s. 6d. per ton for second and best qualities respectively, retail 4s. 6d. per bag; coke 66s. 6d. per ton in the city; turf £4 10s. per ton, or 30s. per load of 16 coal bags. The total quantity of coal discharged upon the quays during the past week was 16,600 tons, as compared with 21,914 tons the week previously, coal vessels being chiefly from Maryport. A contract is open in connection with the Dublin Port and Docks Board for a twelve months' supply of coal. Last week a special meeting of the Nenagh Urban Council, Tipperary, was held to consider the coal shortage in the town, which amounted to a famine, when it was decided to communicate with the Coal Controller in order to have the situation relieved. During the past few weeks there has been an actual scarcity of fuel in Athy, Queen's County. It is stated that there is at present a very large demand upon the Irish coal mines which are working, one of the principal collieries being quite unable to deal with the orders received. By the Coal Controller's orders industrial undertakings only are being supplied, and those who were customers in 1917. It is hoped that in the course of the next few months the situation will have improved and the output increased.

## Coal Shortage and Congestion in South Wales

Congestion still prevails on the railways and docks of South Wales, and the delays which wagons are subjected to is limiting to a good extent the outputs of Welsh coal.

Mr. Findlay Gibson, the secretary of the Coal Owners' Association has presented a statement which clearly shows the serious congestion on the railways and docks, the failure of clearing traffic at the collieries, and the delays of wagons in transit, all of which continue to have a serious effect upon the work of the collieries.

One of the factors, it is stated, which contributes toward the loss of shifts, is the delay in transit and return of colliery wagons sent to inland destinations, but arrangements are now being made to supply an additional 10-15,000 tons per month of anthracite coal to inland consumers, which it is stated, must have the effect of still increasing the congestion on the railways. It is essential that further wagons should be made available for coal for inland consumption if the requirement of home consumers are to be adequately met.

## Coal Resources of Canada

The November number of the Monthly Commercial Letter issued by the Canadian Bank of Commerce contains an interesting item on the coal resources of Canada with particular reference to the utilization of the peat deposits of the Dominion.

The labor unrest in the coal fields of the United States has again directed attention to the fact that important districts in Canada are dependent on them. In the fiscal year ending March last the value of the coal and coke exported from the United States into Canada was \$79,000,000, and two-thirds of it was consumed in Ontario. For the previous fiscal year the actual tonnage of coal imported into the Province was 16,250,000, out of a total for the entire Dominion of 21,649,000 tons. The industries of Ontario have frequently suffered from interruptions arising from labor and transportation difficulties, and the serious nature of these interruptions forced itself on the attention of the public during the war, when the supply of the much-needed munitions, 53 per cent. of which were produced in Ontario, was limited through this cause. Fear of the recurrence of such conditions and apprehension as to the supply of fuel for domestic purposes gave rise to more active efforts for the utilization of local sources of fuel.

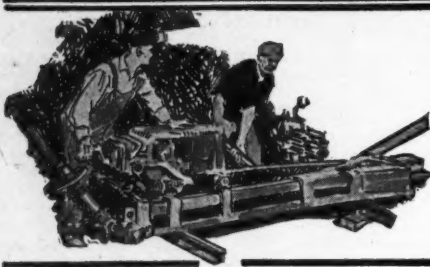
Although Canada as a whole has coal resources greater than those of any country in the world with the exception of the United States, the mines are farther from the industrial centers of Ontario than are the coal fields in neighboring States. Ontario has, however, large beds of peat, the commercial uses of which have been investigated by Government experts, and they are now able to report practical results. It has been determined that peat can be used in combination with coal; and while it will not take its place, it promises to reduce our dependence on imported fuel. Tests made at Alfred, Ontario, indicate that peat ready for use can be supplied at \$3.50 per ton at that point. At this figure there is now a reasonable prospect of its production becoming an important commercial enterprise.

## Coal Shortage Ties Up Japanese Shipping

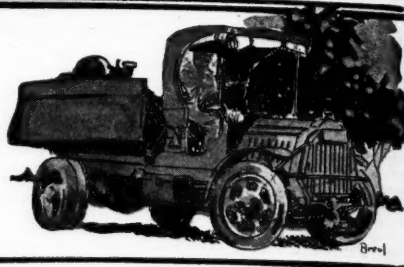
Labor troubles in the United States and England and the decrease in movements of cargo from the Orient to Europe have seriously affected the charter market in Japan.

The coal situation is very acute, and among shipping men there is uncertainty as to the effect it will have on business. There has been no material increase in the coal production, and it is thought that it will be a considerable time before adequate supplies of bunker coal can be obtained. Meanwhile many Japanese ships are indefinitely tied up.

The activities of American shipping in the Pacific are causing some apprehension to Japanese shipping. The carrying trade in this ocean was practically monopolized by Japanese ships during the war, but since the armistice the Pacific Mail Steamship Company and other American concerns have opened new service between America and the Orient. It is reported that as the terms of the American companies are more favorable certain large Japanese importers have contracted to ship a large quantity of raw cotton and steel in these ships.



## COAL AND COKE NEWS



### Fairmont, W. Va.

Nearly all miners at work in northern West Virginia during second week of December. Fairmont field alone loads 8177 cars of coal and coke. Much coal goes west. Railroads take 3454 cars of fuel for own use. General shortage of cars expected until equipment is restored to natural routes.

More coal was mined and loaded in northern West Virginia regions during the second week of December than at any time during the life of the coal strike. Between Nov. 1 and the second week of December there were few weekly working periods in which all the miners were at work. However, northern West Virginia miners were nearly all at work during the second week of December, as the result of a vote taken during the previous week, the miners not waiting for the temporary strike settlement reached at Indianapolis.

As a logical result of such conditions in the Fairmont field alone, a total of 8177 cars of coal and coke were loaded, that representing 407,300 tons of coal and 31 cars of coke. A total of 6767 cars of coal and coke were produced and shipped from the Monongah division alone of the Baltimore & Ohio R. R. There was a larger output of coal in fact from Monongah division mines during the week ended the thirteenth than during the same period of 1918. Loadings on the Monongahela Ry. reached a total of 1410 cars, almost equal to loadings during the last week before the outbreak of the strike.

More coal was shipped West during the week ended the thirteenth than in the other direction, the figures being 3,600 and 3,136 cars, respectively. By far the largest proportion of Western shipments went to Ohio points. More than half the fuel produced on the Monongah division of the B. & O., during the period alluded to, already was utilized by the railroads, there being 3454 cars of railroad fuel shipped to the B. & O., Central of New Jersey, New York Central and other roads. Much of the coal from northern West Virginia is now being allowed to go forward to original consignees, although subject to diversion in certain instances.

While mines in northern West Virginia, at the outset of the third week of December, were supplied with just about enough cars to meet requirements, a general shortage of empties before the end of the week was forecasted; in fact it seemed to be inevitable and will continue, railroad officials state, until equipment is restored to its natural route or routes.

There was still due operators of northern West Virginia regions on the middle of the month, approximately \$3,500,000 for shipments diverted and confiscated during the period of the strike, only about one third of the total shipments made having been paid for.

### Bluefield, W. Va.

More healthy conditions of marketing and collecting for coal shipments during second week of month. Cars going to southern fields. General shortage of cars anticipated. Large production in Williamson field. Little change on Winding Gulf. Pocahontas field experiences most severe car shortage of year around the twelfth.

While the production of coal in the Pocahontas and adjoining regions remained unchanged throughout the second week of December, and while there was little prospect of any change during the pre-Christmas period, yet there was a decided change in the distribution of coal, particularly because of the abandoning of diversions which during the strike have played havoc with ordinary marketing and collections. There was in fact a very marked increase in the shipment of coal to the east including tidewater points. Cars were pouring into the southern fields at a great rate throughout the second week of the month, but a general shortage of cars

was anticipated owing to the fact that cars would be in demand elsewhere in view of the resumption of operations generally, and to the further fact that so many cars belonging to the Eastern Car Pool had been shipped far out of their beaten path.

Mines of the Williamson field continued to live up to their reputation of previous weeks for large production, which remained at 150,000 tons or about 80 per cent. of capacity, with only about 9,000 tons lost through a car shortage. Miners appeared to be bent upon earning as large an amount as possible before Christmas, losing only 109 hours in all; fortunately cars continued to be plentiful during the early part of the third week of the month. The tonnage of coal being diverted was limited in amount and Williamson coal was again moving eastward to some extent. Despite repeated promises, however, up to December 17, payment for coal shipped during the period of the strike was not forthcoming and producers were quite seriously embarrassed.

There was little or no change in mining conditions in the Winding Gulf field during the second week of the month, slight gains only being made. For the first time in a period of six weeks, the diversion and confiscation of coal had ceased except in cases of emergency, and coal from the Gulf was beginning to flow in its natural channels once more.

Transportation and general working conditions throughout the Pocahontas region were conducive to a large production throughout the second week of the month until about Friday, the twelfth, when there was a sharp decline in the supply of cars. In fact cars were so scarce, that it portended a suspension of operations at some of the smaller mines. Both railroad officials and coal operators, in view of the shortage which began to manifest itself on the twelfth, regarded as unavoidable one of the most severe car shortages of the year.

Delivery of more eastbound coal from the Pocahontas region and the rescinding of the order relative to the shipment of all Clinch Valley coal west over the Louisville & Nashville and the Carolina, Clinchfield & Ohio, featured the week in the southern part of the state. Eastbound coal through Bluefield was almost twice as large in volume during the week ending the thirteenth as in previous weeks. Shippers in this part of the state were still facing a financial stringency owing to the delay in receiving remittances for the heavy volume of coal shipped since November first.

### Huntington, W. Va.

Decrease of 50,000 tons in Logan output in second week of December. Loss due to car shortage. High water and power trouble the causes. Production 56 per cent Logan operators in serious straights. More than million dollars due on shipments. No cooperation by railroads in payment for coal confiscated.

Production in the Logan field hit the toboggan incline during the second week of December and slid downward for a loss of about 50,000 tons as compared with the output for the previous week; there being only 198,000 tons mined and loaded as against an average of well over 240,000 tons throughout the strike; so that in a large measure the gains made through the resumption of work at union mines were wiped out by losses in the Guyan field. The greatest source of loss was a car shortage amounting to the startling total of 122,000 tons or about 35 per cent. of capacity, car shortage, losses during the six weeks of the strike having been at a minimum.

It was not so much the fault of the Chesapeake & Ohio that the supply of empties was limited as it was the elements, damage to bridges in the Guyan field making it difficult to move either trains of loads or empties. Power trouble also entailed additional losses, that and high water cutting down production

to the extent of over four per cent. One result of high water in the Guyan field was to shut down a few of the smaller mines. Owing to causes enumerated there was a production of not more than 56 per cent. during the week ended Dec. 13, making a difference of more than 1,000 cars in shipment under the previous week. At the beginning of the third week of the month, the car supply was also limited there being only a little more than five hundred loads out of the Guyan on the fifteenth, and the car supply in the field during the early part of the week named is not averaging over 700 cars a day. All Guyan coal is still being routed to western markets, an embargo against eastern shipments to tide water still being in effect. At the present time no Logan coal is being confiscated.

By far the largest proportion of coal shipped from this field, in the period between Nov. 1 and Dec. 15 and, in fact, since the latter part of October, still remains to be settled for; Logan producers having found it necessary to borrow very extensively in order to avoid the financial graveyard. Railroads have shown an absolute lack of co-operation in making payment for coal confiscated or diverted. The sum of more than a million dollars representing shipments from this field, is still due operators for shipments made between Nov. 1 and Dec. 15. Producers of the Guyan region also have been in rather desperate straits owing to the lack of knowledge of final consignees of diverted coal and owing to the tardiness of railroads in making settlement for coal confiscated.

Gains in the tonnage handled by the C. & O. on its entire system, during the second week of December, were almost completely offset by a decrease in shipments from the Logan district. Substantial gains were made in shipments from the New River, Kanawha, Coal River, Sandy Valley & Elkhorn and Long Fork territories. As the number of cars handled during the first week of the month was 10,487 or a total of about 524,350 tons and for the second week of December 10,561 cars, it will be observed that the gain was limited to 74 cars or about 3700 or 4000 tons.

### Charleston, W. Va.

Miners generally at work in West Virginia by Dec. 11. Kanawha region the exception. Amount of wage increase in question in district No. 17. C. & O. mines anticipate car shortage. Most serious question, payment for coal shipped between Nov. 1 and Dec. 13. The "check-off" controversy again to the front in New River field.

When the order to miners of districts No. 17 and No. 29, covering all the organized fields of West Virginia, was received Thursday, Dec. 11, it found practically all union miners in West Virginia at work except those in the southern part of District No. 17, in the Kanawha region. Miners elsewhere in district No. 17, or in the northern part of that district, embracing sub-districts No. 3 and No. 4 in northern West Virginia, were already at work in normal numbers and were producing almost the normal amount of coal. For that reason the agreement reached at Indianapolis, under the terms of which miners were to return to work under the 14 per cent. increase, pending an investigation of the cost of living and coal prices, did not materially alter conditions except in one part of the mining fields of West Virginia, during the second week of December. That the first order cancelling the strike had not been issued in good faith, and was never intended to be obeyed was demonstrated by the alacrity with which the miners, as a whole, obeyed the second order, except in a few isolated instances.

Even after the president of district No. 17 had ordered the miners back to work, it was by no means certain that the operators would get off with a 14 per cent. increase, because the officials of the United Mine Workers were insisting that the Central Competitive field wages also be paid in district No. 17—another case of broken contract and



bad faith, according to the operators. The cancellation of the strike order did have the effect, however, of increasing production slightly, although such increase was somewhat nullified by adverse conditions in the unorganized Guyan field.

While the Chesapeake & Ohio mines had not begun, during the second week of December, to feel the pinch of a car shortage, it was regarded as inevitable, and it was generally anticipated that it would take place during the third week of the month (or just before Christmas), owing to the large amount of Eastern Car Pool equipment in the far West and the large amount of equipment yet remaining to be unloaded at various points.

Of paramount interest to West Virginia operators in this section of the state, by the middle of the month, however, was the question of financing themselves. It presented a most serious problem owing to the fact that little or no coal, shipped from this section between Nov. 1 and Dec. 13, (most of which had been confiscated or diverted), had been paid for. Conditions were such that the companies which had not been producing a large tonnage, between the dates mentioned, were better off than the companies which had produced large quantities of coal, owing to the fact that the means devised by the Railroad Administration for financing the coal companies had proved utterly inadequate.

As instructions to miners in the Kanawha field to return to work, did not reach them until late Thursday, and as it required a day or so to get the mines in the district ready for operation, the tonnage produced in the Kanawha region during the second week of the month was almost insignificant. However, a large number of miners had reported for duty by Friday, and by Saturday virtually all the mines in the district were in operation, though, of course a good many mine workers were waiting until the beginning of the following week to return to work. Miners at Lee Vale and Blakely, where radicals appear to have the upper hand, were the only ones, so far as known who were proving to be recalcitrant.

Prior to Dec. 12, however, the tonnage of coal mined in the Kanawha field was rather small. Only about 25 mines were at work at the outset of the week, although at the same time all the mines in the other part of district No. 17—(northern West Virginia) were in operation. By the time an agreement was reached at Indianapolis, about 45 mines in the Kanawha field were active. Officials of district No. 17 contend that the Government intended that the miners in district No. 17 should be paid the 14 per cent. increase plus the difference paid in the Central Competitive field as between that section and the Kanawha field.

While officials of district No. 29 (United Mine Workers) had ordered the men back to work in that district which embraces the New River region, it was with the proviso that they return to work under the "check-off and closed shop." To this a number of companies demurred, it being generally understood that the contract of Sept. 1 had been abrogated by the strike of miners on Nov. 1, although the attorney general is insisting that the contract be revived and along with it the "check-off", not only the operators but many miners in the New River field are objecting, especially in view of the fact that those who favored the check off were the very men who would not and did not work during the strike. Notwithstanding the uncertainty of what might transpire in the New River field, as the result of the controversy over the "check-off", there was a gradual increase in production in the New River field throughout the second week of the month, the output by Friday, Dec. 12 being at the rate of 80 percent. of normal with 91 mines in operation, as against 81 the day previous. Saturday's production was somewhat smaller.

## Indianapolis, Ind.

Geologist makes report to state conservation commission on coal mining in Indiana. Cites great waste in mining. Recommends legislative action looking to improvement in conditions. Cooperation of commission's geology division and Indiana University.

W. N. Logan, geologist for the state conservation commission, in a report to the commission on coal mining in Indiana says the waste in the mining of coal in Indiana is greater than the average waste in the mining of bituminous coal, reports the "News" of Indianapolis.

"In some states," reported Mr. Logan, "the waste has been reduced to 50 per cent. of the coal mined but the waste in Indiana has not been reduced to that minimum. The waste here has been much greater than it is at present, but there is need for still greater improvement."

Mr. Logan classifies the waste causes as follows: Not robbing the pillars in the room and pillar system; unclean mining in the strip pit method; leaving coal containing partings; producing unrecoverable culm; leaving coal around horse-backs, bells, etc.; mining lower beds before upper beds.

He recommends that the legislature enact "laws to require the mining of all coal beds, two feet or more thick, in the order of their succession from the surface;" he recommends the use, wherever possible, of the long wall system as the most productive method; he recommends the balancing of timber conservation against coal conservation in replacing coal pillars, and advises against the ruining of good agricultural lands to obtain coal from strip mines for temporary benefits.

The report came as the result of the cooperation the commission effected between its geology division and Indiana University. The two state forces united for a geological survey of Indiana's natural resources and the coal report is one of the first. The report goes into some detail as to coal mining in Indiana and how waste may be prevented.

Richard Lieber, director of the commission, deemed the report of such constructive value that he has arranged to have it printed in full in the Indiana yearbook which is to be off the press in January.

## Pottsville, Penn.

Coal mined in the heart of Pottsville at an early date. Captain Baird Halberstadt produces authority for interesting statement at meeting of Schuylkill County Society. Historical data presented. Captain Halberstadt fuel administrator for the district.

At a meeting of the Schuylkill County Historical Society, at Pottsville recently, Captain Baird Halberstadt surprised a large audience by proving that coal was mined in Pottsville in 1784, a number of years before the alleged discovery of anthracite at Summit Hill by Philip Gintner in 1791.

Captain Halberstadt, who is Federal Fuel Administrator for this district, proved his assertion by producing a copy of an Act of the Pennsylvania Legislature, dated March 15, 1784, in which reference is made to the coal mines at Balzer's saw mill, in what is now the heart of Pottsville.

The real pioneer in the use of anthracite declared Captain Halberstadt, was the venerable Dr. Thomas C. James, of Philadelphia, who used anthracite in 1804 and predicted that it would become the general fuel for Philadelphia and vicinity, a prophecy which has been abundantly fulfilled. In thus making the first use of anthracite in 1804, Dr. James, at Philadelphia, was four years ahead of Judge Fell at Wilkes-Barre, who first used hard coal in a grate in 1808.

It is curious to note that these pioneers in the use of coal at Philadelphia and other points met much prejudice. Up to 1820 wood was so plentiful and cheap that the use of coal made little progress.

In connection with the discovery and use of coal, attention is directed to an article entitled, "The Story of Coal," which appeared in the Mar. 6, 1919, issue of Coal Age.

## Birmingham, Ala.

Friendly suit to test coal and iron ore tonnage tax validity. Action to be brought against Republic Iron and Steel Co., in accordance with agreement between state and operators. All coal and iron ore operators to assist in defense. Operators claim tonnage tax is discriminatory and double taxation.

Suit is being prepared, it is stated, to test the validity of the coal and iron ore tonnage tax incorporated in the general revenue bill passed by the legislature in September. It is understood that the Republic Iron and Steel Co. will be the defendant, the state of Alabama the plaintiff and that the action will be instituted in Jefferson County. It will be in the nature of a friendly suit continuing the "Birmingham Age-Herald", and it is believed that a final decision by the supreme court of the state can be obtained in a few months.

Several weeks ago an agreement was reached by the coal and iron operators and Governor Kilby, State Auditor Smith, Treasurer Bradley and the state Tax Commission, whereby the tonnage tax should be paid over to Treasurer Bradley, as an individual, in trust to be held by him until the supreme court could pass on the constitutionality of the tax act.

Under this agreement checks for the amounts due have been made out by the various operating companies and delivered to Mr. Bradley, who is holding them in a

separate fund in trust, according to the agreement.

The Republic Iron and Steel Co. mines both coal and iron ore in this state, and it is understood that it was selected to contest the validity of the tonnage tax for that reason. While the action will be against the Republic company, it is understood that all coal and iron ore operators in the state will aid in the defense, each bearing its proportionate share of the cost. The state, in its petition, will set out the passage of the revenue act, including the tonnage tax; the date on which tax payments were due, and alleged failure to pay.

According to information gained from one of the operators, they will contend that the tonnage tax clauses of the revenue act are invalid in that it is discriminatory and double taxation and includes other objections, which they declare, clearly are in violation of the constitution.

In passing the revenue act the legislature classed the tonnage tax as a license or privilege tax, which, if true, probably would not make it double taxation.

The operators contend that the fact that it comes under the license classification does not in fact make it a license tax, and that the courts will be compelled to construe the act according to its real meaning and not necessarily according to the interpretation put upon it by the legislature.

## Ashland, Ky.

Northeastern Kentucky ships 186,490 tons of coal in second week of December. Car supply good. Greatest handicap to production is lack of settlement for coal. \$2,000,000 due operators for November shipments. Suspension of mines probable unless help is forthcoming.

While the output of mines in northeast Kentucky during the week ended Dec. 13 was about 1,000 tons less than during the first week of the month, amounting in all to 186,490 tons, yet it was 45,000 tons in excess of production for the same period of 1918, showing a gain of 25 per cent.

Transportation companies were equal to the demands made upon them for empties and for the movement of loads, although it became necessary for them to draw on their reserve crews and to use additional motive power. The 14 per cent. advance in wages had a healthy effect in northeast Kentucky fields and miners were bent upon earning as much as possible before the Christmas holidays began.

The greatest handicap imposed on producers, however, and which threatens to seriously impede production unless the situation is remedied, is the failure of the railroads to make settlement for coal received and used. Banks had about reached the limit of their lending capacity, and producers were at a loss as to how to secure financial assistance in order that they might continue operations. Fully three-fourths of the coal shipped from northeastern Kentucky during November had not been paid for up until the middle of December, there being due operators the sum of approximately \$2,000,000 for November shipments of coal.

Jobbers up until the fifteenth had been the principal source of help in financing operators, but by the date mentioned the jobbers themselves had exhausted their resources and were no longer in a position to extend further help. Indeed, it was stated that unless help was forthcoming during the third week of December, there was every probability of a number of mines having to suspend operations. While the promptness of the railroads in paying for fuel diverted to the railroads for consumption has been widely advertised, operators claim that as a matter of fact there had been no such promptness. Relief was expected from the present situation through the fact that coal was to be moved to regular customers without interference by diversion, and through the fact that the regular trade might make payments sufficiently prompt to save mine owners from suspending operations.

## Vancouver, B. C.

At the first annual meeting of the Canadian Mining Institute to be held in western Canada, which took place from Nov. 26 to 28 inclusive, at Vancouver, B. C., the coal mine operators of British Columbia were well represented. Special provision was made for those specially interested in the industry, the greater part of the program on Thursday morning, Nov. 27, being devoted to subjects relating to coal mining; arrangements were made to take those who wished to go on a tour of inspection to the Nanaimo, Wellington, and Cassidy collieries. Many made the trip, which took place on the following Saturday, and enjoyed it; their reception by the man-

agements of the various companies being cordial and thorough, provision was made for underground tours.

At the Thursday morning session referred to, O. E. S. Whiteside, of Coleman, Alberta, occupied the chair, and the first address was made by Prof. Joseph Daniels, of the geological staff of the faculty of the University of Washington. He told of the popularity of British Columbia coal in the state of Washington, because the consumer liked the fine large lump coal which was placed on the market. Coal mining in Washington, he said, was difficult, most of it being done by hand because, owing to the dip of the seams, machinery was not feasible. He thought that coal mining in that state was more expensive than elsewhere through high labor costs, mining difficulties and the cost of development. Furthermore much fine coal was made and considerable of it had to be washed.

The action of the Granby Consolidated Mining and Smelting Co. in opening its own mines on Vancouver Island to supply its new by-product ovens at Anyox, had the effect of decreasing the demand for coking coal in Washington. R. R. Wilson, of the Granby company's collieries, at Cassidy, contributed an interesting paper on the Cassidy camp, plant and housing accommodation. Thos. Graham observed that the Granby company had set a pace in coal mine conditions that it would be difficult for other operators to follow. F. W. Gray, of Montreal, contrasted the conditions at Cassidy with those obtaining in eastern camps in which he reflected much credit on the former. H. N. Freeman, Black Diamond, Wash., read a paper in which he urged greater co-operation between officials and workmen in the mines. If more thought were given to this it would lead to a reduction of friction and better results. One point brought out was the practice of operators of arranging for the sale of more coal than could be produced without consultation with the mine management.

### Nanaimo, B. C.

In discussing progress in first-aid and safety-hat appliances and training in connection with the coal mines of British Columbia, credit is given the Canadian Western Fuel Co., of Nanaimo, as being the first concern of its kind to take up in this province the training of its employees in first-aid and mine-rescue work. It was the first company to voluntarily install mine-rescue apparatus and institute a training station. This was done when T. K. Stockert, of Vancouver, was general manager, and Thomas Graham (now general superintendent of the Canadian Collieries, Ltd.) was general superintendent of the company. It was also the first company to use seismographs in its mines, daily readings being taken to give warning of the possibility of explosions attending seismic disturbances. The Canadian Western Fuel Co. now has organized a first-aid and mine-rescue Association with a membership of about 200. A meeting is held each Sunday morning, at which a lecture is given or paper read on some branch of mine-safety work, after which addresses are given by medical men on first aid. Following the inauguration of the work by the Western Fuel Co., the Provincial Government passed legislation requiring that mines be equipped with safety apparatus and that employees should be trained in its use. All important mines in the provinces, therefore, now are so provided.

### Victoria, B. C.

Thomas Graham, general superintendent of the Canadian Collieries, Ltd., in discussing the present condition in British Columbia in regard to the coal supply, makes the plea frequently heard that the consumer would do much to assist the producer by purchasing his winter fuel in the summer, or at least by getting over the habit of waiting until the first cold snap comes before placing his order. Mr. Graham described the position of the collieries as follows:

"The mines of Vancouver Island have a steady bunkering business with the steamship companies through summer and winter. A large portion of their output, however, is for domestic consumption. In order that both classes of consumers shall have a steady supply, it is necessary to equalize the summer and winter output. If the householders neglect to stock coal during the summer for winter consumption, it generally happens that a severe period of cold weather in the winter will create an unusual demand for coal, and the mines cannot keep up with both their domestic and bunker orders. Then they are faced with the disagreeable situation of re-

fusing coal to those shipping companies that have made it possible during the summer months to keep the mines operating and give employment to large numbers of men. This, of course, endangers future business from such a source. In order to keep miners employed steadily throughout the year, it is necessary to have a steady demand all the time, and this is the reason that for years the operators have been trying to induce people to buy their coal supply months in advance."

### PENNSYLVANIA

#### Anthracite

**Hazleton**—The proposed new coal washery at Silver Brook, south of here, will be operated by electricity, according to plans of the operators. The power will be obtained from the Harwood Electric Co.

**Scranton**—The First Christian Church on North Main Avenue was quite seriously damaged recently by a mine cave which is thought to have occurred over workings of the Leggett Creek Coal Company. One of the main concrete supports under the church was destroyed, windows broken and the heating system demolished.

**Scranton**—Residences in the 900 block, West Elm St., to the number of nearly a dozen, were damaged in a surface subsidence recently. All water service in the neighborhood was discontinued. The gas main also was broken but the break occurred during the day time and no one was injured by the gas fumes. Many of the homes affected by this subsidence have been damaged by previous caves.

**Pottsville**—Albert Thompson, of Philadelphia, a coal operator, has sold his coal lands in this county, he announced recently, for \$300,000. There are 10,428 acres in the tract and the stamp tax alone on the deeds cost \$300. The purchaser is S. Maud Kammerling. The lands were recently heavily taxed by the County Commissions at a valuation of \$350,000.

**Hazleton**—A Philadelphia daily states that "coking" of culm from the anthracite mines, hitherto only of value in special forced draught furnaces, is being tested by George Wilmot, local iron works owner, in connection with a process invented by a Philadelphia chemist. Anthracite coal does not coke but when culm is mixed with suitable binders does form briquettes. This process noted may include some new method of this kind.

The experiments are said to be exciting wide interest, as their success would throw on the market millions of tons of coal which are available for such a purpose. The tests are in progress in a lumber yard, which is closely guarded. It is understood the anthracite culm "cokes" into fuel the size of egg coal.

#### Bituminous

**Josephine**—The Smith Coal Co. recently installed electrical equipment at its Jewel No. 1 mine here and the modern installation has Pearson property at this place, announces the battery locomotives are used to gather the coal. The present production is about 300 tons per day.

Penn.

**Houtzdale**—The Acme Coal Mining Co., which, in addition to its Frelin, Marjorie and Maguire mines, owns a large interest in the doubled the output of the mine. Storage opening of a second and lower seam on this tract.

**Iselin**—The new Ruth mine of the Lowther Coal Co. near here began operations Nov. 1 and has continued without interruption since that time. The production at the present time is 100 tons per day and this will be rapidly increased. The mine is opened in the Pittsburgh seam which is 7 ft. thick at this point. John O. Jones is superintendent in charge at the mine.

**Indiana**—The tippie of the mine owned and operated by Joe Panaceti, at Starford, Indiana County, northeast of here, was destroyed by dynamite recently. The mine, a nonunion one, was in full operation and the owner believes the dynamiting to have been the work of some individual of "Red" tendencies. The tippie was totally destroyed, together with its contents, entailing a loss of several thousand dollars.

**Phillipsburg**—Kelly Brothers, of Snow Shoe, near here, are going into business on a much larger scale. Their newest venture is the acquiring of the extensive coal mine interests of J. Fred Kurtz and P. McGinness, of Connelleville, and the Bygate estate, of Pittsburgh, at Champion, Fayette County on the Monongahela River. The consideration is said to be \$347,000. When worked to its full capacity the mine has an output of 600 to 800 tons of coal per day.

**Starford**—A mysterious dynamiting occurred here last week when some unknown persons ignited a charge of dynamite under the tippie at the mine of Joseph Panaceti. The entire tippie with all machinery was destroyed and the mine put out of commission for the time being. This mine had been working steadily ever since the strike was called and it is thought the dynamiting was the work of some striking miners at an adjoining mine. Several suspects are under arrest and are being held by the sheriff to await trial.

**Johnstown**—Three men were buried alive recently as a result of a slip of material and earth in an air shaft of the Ebenburg Coal Co., at Colver, near here, and their bodies, which are under tons of debris, the excavation of which is difficult, had not been found at the time of the publication of this notice. The victims are: John Harris, address unknown; Charles Johnson, Gordonville, Va.; Harry Smith, Keyser, W. Va. The men are buried about 40 ft. below the surface and it may be some days before their bodies are recovered, it was learned.

### WEST VIRGINIA

**Glen Jean**—There was greater production at the mines of the McKell Coal and Coke Co., in Fayette County, W. Va., after the strike beginning Nov. 1 was under way than before that time, owing to the fact that the McKell mines were closed down when the management refused to agree to the "check-off" and "closed shop". However, after Nov. 1 when the operators of the New River field abolished the check-off, then work was resumed by the miners at the McKell operations; since that time production has been steadily on the increase, with about 50 per cent. of the men at work.

**Williamson**—Negotiations have been consummated under the terms of which the War Eagle Coal Co. has acquired the leaseholds, equipment and assets of the Tracers Coal Co. operating in the Williamson field, at a consideration said to have been \$125,000. The company acquired was owned and operated by O. L. Biddison and others most of whom were from McDowell County. The plant of the Traders Coal Co. is a comparatively new one having been in operation only a few years. Operation of what was the Trader company plant will be directed by Geo. W. Coffey, superintendent of the War Eagle Coal Company.

**Macdonald**—The New River Co. is expending the sum of \$35,000 on the construction of a new tippie at its Summerlee mine, and expects to have the new tippie completed and ready for operation by Jan. 1. Operations have been suspended during the erection of the tippie, miners of the Summerlee mine finding employment at the Lochgelly operation. It will be possible to screen coal to four different sizes after the new tippie is put in commission. At the same mine self-dumping cages and automatic cagers have been provided. Similar equipment as well as new screens and conveyors are being installed at the Whipple mine of the company. The Whipple tippie was the first steel structure of its kind erected in the New River field.

**Charleston**—There was a smaller number of deaths in the mines of West Virginia during the month of November than any time in recent years, the total being only 15. Of course the fact that non-union mines only were in operation regularly, may have been a factor in limiting the number of casualties. By far the largest proportion of deaths was due to the usual cause—fall of roof and coal; there were nine deaths from that cause. Mine car accidents, however, cost four lives, while a motor accident was responsible for one death, and a mining machine for another casualty. Logan, where there was a large November production, took the lead in the number of deaths with five, McDowell having no mine casualties. While there were two mine fatalities in Fayette County, there was only one death in each of the following counties: Brooke, Boone, Kanawha, Marion, Mercer, Mingo, Preston and Raleigh. Of the 15 men killed 11 were Americans and four were foreigners.

**Huntington**—While there is no prospect of the immediate improvement of coal carrying facilities on the Chesapeake & Ohio R. R., as a result of the conference of the committee of C. & O. coal operators held with high officials of the C. & O. at New York recently, yet the executives of the road have promised to have a thorough survey of the roads needs made so as to determine what steps should be taken to handle coal more expeditiously. There were fully 50 operators present at the New York meeting, their position being that as soon as industrial conditions became normal again, the present facilities of the C. & O. would prove to be entirely inadequate in handling the immense tonnage of coal which



would be produced. They therefore asked that the management appropriate \$60,000,000 for the purpose of increasing side track facilities and toward purchasing new equipment. The operators were told improvements could not be made on any extended scale until after the roads were returned to private ownership, but that in the meantime an investigation of the improvements necessary would be made.

**Charleston**—Confiscation and diversion of West Virginia coal between Nov. 1 and Dec. 15 the greater part of which remained unpaid for on Dec. 15, including a portion of the coal shipped from various West Virginia fields during the latter part of October, amounted to between \$15,000,000 and \$20,000,000 as nearly as it is possible to estimate it. Much of this coal was taken over by the railroads who have been extremely tardy, according to operators, in paying for such coal, although promises had been made of prompt remittances. However, for one reason or another railroads seemed to be bent on "passing the buck" and finding excuses for not paying, raising questions as to prices, etc. In many cases and in some sections coal was not weighed, nor were shippers in possession of information showing to whom coal had been delivered. Therefore, in such cases it was impossible to even render bills for coal. As showing instances of the hardships worked on operators of the Tug River field, for instance, 10457 cars or 572,850 tons of coal, worth in the neighborhood of \$1,750,000, had been shipped and diverted between Nov. 1 and Dec. 11, and unpaid for on the last date given. During this same period, the value of shipments from the whole Pocahontas region was approximately \$10,000,000, and up until Dec. 11, only about 10 per cent. of the coal so shipped had been paid for. The great bulk of a tonnage of 409,000, shipped from the Williamson field in the six weeks already mentioned (valued at approximately \$1,000,000) had not been paid for up until the middle of the month. There was a total of 437,325 tons of coal diverted from the Guyan field, valued at approximately \$904,629 which also had not been paid for. From all parts of northern West Virginia, between Nov. 1 and Dec. 15, total shipments of coal aggregated about 2,000,000 tons, with an approximate value of \$5,200,000. The greater part of this coal was either confiscated or diverted. There was still due northern West Virginia operators on Dec. 18, about \$3,500,000 on the \$5,200,000 due.

#### OHIO

**Columbus**—With the settlement of the miners' strike, mining in all parts of Ohio is being gradually resumed. In fact miners generally have shown a willingness to return to work at once in order to get some Christmas money, and consequently many of the mines resumed operations Dec. 12. Some few plants were started the previous day, however, and machines were busy cutting the coal ready for the shooters. Loading started fairly active on Saturday Dec. 13. Just how quickly a full force of men will be at work depends largely upon how much the miners were scattered during the suspension. The first pay of the miners will be just previous to Christmas and will include every hour put in up to and including Dec. 15. Day laborers have been busy for several days cleaning up the mines in preparation for resumption.

#### INDIANA

**Clinton**—Six men were killed and three seriously injured in an explosion at Bogle, coal mine No. 3 at Jacksonville, near here recently. All of the men were either mine officials or employees in the office of the company, who, in attempting to get out sufficient coal for the boilers, set off a badly prepared blast. The mines had been closed by the strike. The dead are John Stark, Terre Haute; Herbert Campbell and Joe Robertson, Clinton, office men; S. G. Stephens, Terre Haute, civil engineer; Charles Watson, Clinton, assistant mine boss and John Logston, Terre Haute, room boss. The mine was not badly damaged by the explosion it was stated and little difficulty was in encountered in removing the injured and the bodies of those killed.

#### KANSAS

**Topeka**—John Crawford, state labor commissioner, has notified all recruiting offices for volunteer workers that no more men are needed at present in the coal fields. All the strip mines are working with full crews of volunteers. There has been a considerable number of men who have paid their own railroad fares and have asked for work when they arrived at Pittsburg, Kan. There are enough of these men who are continually coming into the Pittsburg region to replace all who are going home. Mr. Crawford warns

recruiting offices that if additional men are sent into the mines that it would result in congestion and wasted effort.

**Pittsburg**—General Leonard Wood has taken charge of the Federal troops in this section, where they are guarding volunteer workers in the mines. General Wood and Governor Allen, of Kansas, will confer at Topeka relative to the situation in the Kansas coal fields. Regular troops are stationed at Pittsburg and while they have not been used, there has been the closest cooperation between the regular forces under Colonel Lewis and the state troops under Colonel Hoisington. The regulars will not be withdrawn, it is said, until the national guard is dispensed with and that will probably not be done until the state relinquishes control of the mines. The receivers will continue in control of the mines, possibly until the coal famine in Kansas is relieved.

**Topeka**—An agreement has been made between the United States Fuel Administration and Governor Allen, of Kansas, whereby the entire western half of Kansas will be furnished with coal by the Fuel Administration, while the eastern half of the state will be furnished with coal by the state as far as possible. There are now many tons of coal being held on railroad sidings in eastern Kansas for local use. The Fuel Administration will supply all of the coal needed on the Rock Island, west of Belleville; on the Union Pacific, west of Salina; on the Missouri Pacific, west of Hoisington; and on the Santa Fe, west of Kinsley. This coal comes from Colorado and Wyoming where mines have been operating all through the strike. The state mined coal will all be shipped to eastern Kansas points and this will avoid any long hauls by both the state and the National Fuel Administration. Railroad men point out that there is complete co-operation between the state and the railroads in handling emergency coal by the fact that a car was delivered at Liberal, including one transfer and entirely across the state, in five days. This required a haul of more than four hundred miles, much faster than the average daily haul of coal cars. A car of coal for Coldwater was delivered in four days, almost an equal distance, but not requiring a transfer.

#### IOWA

**Perry**—For almost half a century a small fortune has been lying in plain view on the farm of E. D. Ridnour, northwest of this city, about 35 miles from Des Moines, and it was not until a coal famine occurred that its value was realized. By the discovery this community had access to about 2,000 tons of good fuel. In the days when this section was one of the big coal producing centers of Iowa, coal was selling for \$2 or \$3 per ton, and the steam coal or slack was a drag on the market. With the steam fuel was a lot of nut or pea coal, and because it was considered worthless it was piled out on what was then cheap land. That was thirty-five years ago. Recent investigations have shown that, aside from an eight or ten in. crust on the outside of the pile, the coal is of fair quality. The owner of the pile placed a reasonable price upon it, and it was delivered here, during the recent strike, for about half the price named by the Government for newly mined coal.

#### OKLAHOMA

**McAlester**—Production of coal, which began a few days ago at many of the Oklahoma strip pits, has been hampered by the severe cold weather. Twenty-one cars of coal were mined by approximately five hundred volunteer workers in one day. The volunteer workers are said to have done exceptionally good work.

#### Personals

**William H. Kramer**, of Somerset, Penn. has been appointed manager of the Pennsylvania division of the Consolidation Coal Co. His headquarters will be at Somerset.

**J. C. Green** has been made superintendent of the Strader operation of the Greenmar Coal Co., the mine being located on the Coal and Coke R. R. not far from Elkins, W. Va.

**Patrick J. Walsh**, mine inspector of the ninth bituminous district, at Connellsville, Penn., has resigned his position to become manager of a large company in the Connellsville region in which Mr. Walsh is interested.

**S. S. Hall** has been appointed mine inspector of the ninth bituminous district of Pennsylvania, by Chief of Department of Mines Seward E. Burton, to fill the vacancy of P. J. Walsh, resigned. Mr. Hall's headquarters will be at Connellsville, Pa.

**S. Steinbach**, manager of the Pennsylvania division of the Consolidation Coal Co., with headquarters at Somerset, Penn., has resigned to take charge of production at the mines of the Penn-Mary Coal Company—a subsidiary of the Bethlehem Steel Corporation.

**Heath C. Clark**, of Punxsutawney, Penn., son of B. M. Clark, president of the Rochester & Pittsburgh Coal and Iron Co., has been made assistant solicitor and assistant to the president of the Rochester and Pittsburgh company. Mr. Clark will move to Indiana shortly where his headquarters will be located.

**John A. Scott**, an attorney of Indiana, Penn., has resigned as a member of the Pennsylvania State Workmen's Board to accept the position of solicitor for the Rochester & Pittsburgh Coal and Iron Co. and allied interests. Mr. Scott will make his headquarters at Indiana, Penn., where the general offices of the company will be located in a short time.

**H. I. Smith** has resigned his connection with the Vandalia Coal Co. of Sullivan, Ind., to go to Serbia where he will be a member of the Advisory Committee, Kingdom of the Serbs, Croats and Slovenes, American Legation, Belgrade, Serbia. In his new location, Mr. Smith will act in an advisory capacity in mining matters. His American address for mail is, Kingdom of the Serbs, Croats and Slovenes, 115 Broadway, New York City.

**Frederick B. Lincoln**, of Pittsburgh, Penn., on Dec. 1 severed his connection with the Pittsburgh Terminal Coal and Railroad Co., as vice president and general manager. No successor to Mr. Lincoln has been named and the duties of the office will be taken care of by the present organization, A. W. Calloway, of Baltimore, Md., is president of this company; and M. D. Kirk, of Pittsburgh, is chief engineer and assistant general manager.

**E. Steck** has resigned from the organization of T. C. Keller, coal operator, where he has been in charge of design, construction and installation of mechanical, electrical and steam equipment. Mr. Steck has entered the firm of C. A. Chapman, Inc., engineers and constructors, Steger Bldg., Chicago. He still continues to act in the same capacity for the Keller interests. Since Mr. Steck was graduated from college in 1901, he has been connected with various electrical concerns in the Middle West and in the East.

#### Obituary

**Joseph Benjamin Dickson**, who was chairman of the Anthracite Committee of the United States Fuel Administration during the war, died in the Post Graduate Hospital, New York City, on Friday, Dec. 12, following an operation. At the time of his death Mr. Dickson was a member of Dickson & Eddy, No. 17 Battery place and president of the Price-Pan-coast Coal Co. and the West End Coal Co. He was the son of Thomas Dickson, at one time president of the Delaware & Hudson R. R. Co., and was a graduate of Lafayette College.

#### Industrial News

**Glenn, Ky.**—The Federal Coal Co. has increased its capitalization from \$10,000 to \$25,000 to provide for general business expansion.

**Fayette, Mo.**—B. N. Tanner, of this place, and associates, are arranging plans for the development of coal properties in Howard County, near here.

**Williamsburg, Ky.**—The High Split Coal Co. has increased its capitalization from \$300,000 to \$400,000 to provide for general business expansion.

**Swiss, W. Va.**—The Kanawha Collieries Co. is considering plans for increasing the capacity of its plant. It is proposed to have a daily output of about 400 tons.

**Drakesboro, Ky.**—The Black Diamond Coal and Mining Co. is understood to be arranging plans for the rebuilding of its plant recently destroyed by fire, with estimated loss of about \$20,000. W. W. Bridges is manager.

**Columbus, Ohio.**—The Ganaden-Goshen Coal Co., Columbus, has been incorporated with a capital of \$300,000; S. H. Yocum, L. O. Schafer, George L. Stephenson, W. J. Eckart and Fred Anthony are the incorporators.

**Fayetteville, W. Va.**—Plans are being matured by the Maryland New River Coal Co., with mines on Keeney's Creek, for the further development of its properties and a larger production of coal. This company is under the management of M. L. Garbey.

**Pickneyville, Ill.**—The Illinois Sixth Vein Coal Co., it is understood, purchased from the West Virginia Coal Co., of St. Louis, its two mines and mining property on the Wabash, Chester and Western R. R. The new purchaser maintains sales offices in Chicago.

**Willsbury, W. Va.**—New houses for miners are to be built by the West Virginia-Pittsburgh Coal Co., in Willsbury and vicinity at a cost of \$35,000. This information has been made public by E. M. Raush, general manager of the company.

**Charleston, W. Va.**—New equipment has been installed at the plant of the Carter Coal Co., operating at Belle, W. Va., consisting of mining machines, etc. The company is desirous of increasing its production as much as possible. The president of the Belle company is O. Jones Dorsay.

**Charleston, W. Va.**—The Cowen Coal and Coke Co., of Wheeling, Va., has been incorporated to operate mines in Webster County; capital stock \$500,000. Incorporators: George H. Leathers, of Oakmont, Penn.; Frank Newingham, W. W. Leach and Aaron Blumenstein of Apollo, Penn., and Harry W. Cannon, of Monongahela City, Penn.

**Steubenville, Ohio.**—The J. O. Arnold Coal Co., which has successfully operated a mine east of Follansbee for the past two years, will open a second mine in Cross Creek district, according to an announcement made by J. O. Arnold, president of the company. The new mine will be located on Cross Creek, one mile from the Ohio River, on the Wabash Railroad.

**Murphysboro, Ill.**—The Big Muddy Coal and Iron Co., of St. Louis, has bought something like 600 to 800 acres of coal lands south of the Big Muddy River, and will sink mines and build a new town a few miles off the main line of the Illinois Central R. R. The coal on this property is the No. 1 seam which averages about four feet in thickness. This is a gas and coking coal proposition.

**Wheeling, W. Va.**—Wheeling is to be the headquarters for the newly organized Cowen Coal and Coke Co., which will operate in this section, Pennsylvania parties being largely interested. The new concern has an authorized capital of \$500,000, the company being organized by the following men: W. W. Leach, Aaron Blumenstein, Frank Newingham, of Apollo, Penn.; George H. Leathers, Oakmont, Penn.; Harry W. Cannon, Monongahela.

**Mulkeytown, Ill.**—John Henderson, of the West Virginia Coal Co., of St. Louis, has taken an option on 2200 acres of Franklin County coal lands west of this place. Drill holes show a seam averaging eight feet and better of the regular Franklin County coal. Arrangements are being made to sink new mines on the property the coming spring. It will be served by the Illinois Central, Chicago Burlington & Quincy and the Missouri Pacific railroads.

**Elkins, W. Va.**—Successful coal men of Upshur and Randolph counties are behind the newly organized Green-Mar Coal Co., whose general office is to be located at Elkins, but whose operation is to be continued at Adrian in Upshur County; this company being capitalized at \$50,000. The following are the principal stockholders: A. F. Martin, W. H. Green, J. F. Brown, E. A. Bowers, all of Elkins; and F. A. Reed, of Tallmansville, W. Va.

**Louisville, Ky.**—Prof. W. R. Jillson, state geologist, in an exhaustive report on coal properties in Knox County, states that there are more than a dozen seams in the region, and that numerous small openings have been made all through the county, especially in the Stinking Creek section. There is much coal in the county and in neighboring fields, and there are good railroad facilities at the lower end of the valley, which would result in profitable operations.

**Columbus, Ohio.**—An investigation is being made to fix the responsibility for the placing of eight one-pound sticks of dynamite in a car of coal recently received here. The car was unloaded by the United States Scrap Iron and Metal Co., when the explosive was discovered. Whether the dynamite was placed in the car by people intending to destroy a power plant or whether it was hidden in the coal to be secreted is now being investigated.

**Williamson, W. Va.**—Among other structures at the plant of the War Eagle Coal Co., at War Eagle, W. Va., destroyed by fire on the night of Dec. 8, was the head-house, the fire causing considerable loss of other property, as well as loss of time. As it became neces-

sary to order a new drum and shive, it will be fully six weeks from the time of the fire before the company is able to resume operations. However, the company was fully insured against such time loss. The origin of the fire so far remains a mystery.

**Louisville, Ky.**—It is reported that a deal is pending for the acquirement of the big coal properties and developments of the St. Bernard Mining Co., which has about nine operations in Hopkins and Webster counties, Ky. It is reported from Evansville, that Philadelphia capitalists, including the Drexel Banking Co., are interested in the deal, which will involve about \$2,500,000 if it goes through. The St. Bernard is the largest company operating in western Kentucky, and has its headquarters at Earlinton.

**Cumberland, Md.**—The Kalbaugh Coal Co. (Box 370), recently organized with a capital of \$25,000, is arranging for the immediate development of about 500 acres of coal properties in the vicinity of Barnum, Mineral County, W. Va., to have a capacity of about 150 tons daily. Complete equipment for all features of operation will be installed. Z. T. Kalbaugh, Piedmont, W. Va., is president; T. F. Schaffer, Cumberland, Md., is secretary and treasurer; and A. E. Gamble, Westernport, Md., is superintendent.

**Winding Gulf, W. Va.**—Construction work is to be begun in the very near future on the central machine shop building of the Winding Gulf Colliery Co., at this place. The building to be of fire-proof construction. Special provision has also been made for the lighting of the new building and for equipping it with the latest machinery. Plans and specifications for the new structure have been submitted by the engineers and have been approved by the management of the company. The new machine shop is to replace the one destroyed by fire.

**Charleston, W. Va.**—The Hazy Eagle Coal Co., organized during the summer and in which Charleston people are largely interested, will soon be ready to begin operations on Marsh Fork of Coal River, near Jarrolds Valley, where the company has under lease 1100 acres of coal land. The seams to be developed are the No. 2 Gas and the Eagle coal beds. The officers of this company are George Morrow, president; C. E. Krebs, vice president; and Paul J. Newton, treasurer. President Morrow will be in direct charge of the operations of the company.

**Wheeling, W. Va.**—Expansion of the operations of the J. O. Arnold Coal Co. has been determined upon by that company according to an announcement just made by its president—J. O. Arnold. This company has had a mine in operation near Follansbee for several years, and now proposes to open another mine on Cross Creek, Cross Creek district, of Hancock County, about one mile from the Ohio River. A siding will be built from the new mine to the Wabash Railroad. Surveys are being made preliminary to the beginning of actual development work. When the new mine is ready for operation about 100 men will be employed.

**Charleston, W. Va.**—The West Virginia Eagle Coal Co., 1101 Union Building, of this place, which recently filed articles of incorporation with a capital of \$100,000, has perfected its organization, and is arranging plans for the development of about 1214 acres of coal properties located in the Boomer, W. Va., district. It is proposed to install complete mining equipment including steel monitors, electric motors, and auxiliary apparatus, to provide for a capacity of about 1000 tons daily. William G. Conley, Charleston, is president; L. S. Tulley, Mt. Hope, W. Va., vice-president; and J. E. Charlton, Boomer, W. Va., treasurer and manager.

**Charleston, W. Va.**—When the new plant of the Posler Coal Co., organized a few months ago by Charleston people headed by T. E. B. Siler, of the Marsh Fork Coal Co., is completed and ready for operation (as it will be very shortly) it will represent an investment of over \$200,000. The plant of the company is on Campbell's Creek, near Charleston. The equipment for the mining of coal is complete in every respect including tipples and shaker screens for the preparation of different sizes of coal. The company expects to begin the production of coal early in 1920 and plans production at the rate of 1000 tons a day. T. E. B. Siler, of Charleston, is the president of the company.

**Cadiz, Ohio.**—The Goodyear Rubber Co., of Akron, Ohio, after six months of negotiations, has closed a deal for about 5,000 acres of coal land, which is located on Short Creek, Harrison County, at this place. A big plant will be erected including a town planned to have all modern improvements of sewerage, electric lights and a water system. The erection of the houses will begin as soon as the new town is laid out and a spur of the Wheel-

ing & Lake Erie R. R. built to the mine. The Goodyear Company uses a large amount of coal per day and the corporation is now ready to mine its own coal as soon as the preliminary work is done. The first report was that Goodyear was going to move its factory, but the company will remain in Akron and have its coal shipped.

**Mt. Hope, W. Va.**—A transaction of considerable magnitude in the New River field, consummated about the middle of December, was the sale of the East Gulf Coal Co., with large holdings in Fayette County, W. Va., to J. C. Sullivan, of Tralee, W. Va. and C. H. Mead and associates of Beckley, W. Va., the deal involving the sum of approximately \$750,000. The East Gulf company was organized about a year ago by P. M. Snyder, S. A. Scott and others, being capitalized at \$500,000. During the summer the company absorbed the Simrall Coal Co., the capitalization of the East Gulf company being increased to \$800,000. It is understood that the new company has also taken over the East Gulf agreements as to the payment of royalties. The new owners also plan to increase in the production of the company.

**Williamson, W. Va.**—While officials of the two companies are preserving silence it is now considered certain that the large holdings, plants and assets of the Red Jacket Consolidated Coal and Coke Co. and the Red Jacket Jr., Coal Co. will be sold in the near future, as has been rumored for some time. It is believed that the deal will be consummated either before or shortly after the beginning of the new year. For the last six weeks H. S. Schoew, a former operator in the Williamson field and an expert on mining matters, has been engaged in examining and inspecting the properties, equipment, etc., of the Red Jacket companies; he has been aided by a corps of geologists and accountants, and has had the advice in such work of examination of General Edward O'Toole, general manager of the United States Coal and Coke Co., a subsidiary of the U. S. Steel Corporation. That and the fact that the U. S. Coal and Coke Company not long ago purchased large tracts from the United Thacker Coal and Coke Co., on Mate Creek, adjoining the Red Jacket properties, has confirmed the belief that the United States Coal and Coke Co. is to become the purchaser of the Red Jacket properties, although it is also rumored that the Solvay company may be an interested party.

## Trade Catalogs

**Proving Industrial Values.** The Dorr Co., Westport, Conn. Pamphlet. Pp. 12; 7½ x 10 in.; illustrated. Artistically treated description of the laboratory of the Dorr company.

**Nelson Valves.** Nelson Valve Co., Philadelphia, Penn. Catalogue and Price List No. 10. Pp. 156, 5¼ x 7¾ in.; illustrated. Complete description of the valves made by this company.

**Link-Belt Electric Hoists and Overhead Cranes.** The Link-Belt Co., Chicago, Ill. Book No. 380. Pp. 100; 6 x 9 in.; illustrated. Complete description of Link-Belt hoists and cranes and illustrations of numerous installations.

**Link-Belt Labor Saving Elevators and Conveyors.** The Link-Belt Co., Chicago, Ill. Book No. 375. Pp. 108; 6 x 9 in.; illustrated. Description of the Link-Belt freight and package handling machinery and modern labor-saving equipment. Applicability to various industries illustrated.

## Coming Meetings

**Northern West Virginia Coal Operators' Association** will hold its next meeting Feb. 10, 1920, at Fairmont, W. Va. Secretary, George T. Bell, Fairmont, W. Va.

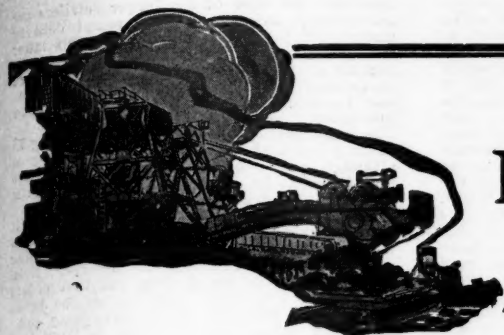
**National Conference of Business Paper Editors** will meet at the Astor Hotel, New York City, Jan. 16, 1920. Secretary, R. D. Hall, 36th St. and 10th Ave., New York City.

**American Institute of Mining and Metallurgical Engineers** will hold its next meeting Feb. 16 to 19, in New York City. Secretary, Bradley Stoughton, 29 West 39th St., New York City.

**The Wholesale Coal Trade Association of New York** will hold its next meeting Jan. 20, 1920, at the Whitehall Club, New York City. Secretary, Charles S. Allen, 1 Broadway, New York City.

**The Rocky Mountain Coal Mining Institute** will hold its winter meeting Jan. 19 to 22, 1920, at Denver, Colo., with headquarters at the Albany Hotel. Secretary, F. W. White-side, Denver, Colo.





# MARKET DEPARTMENT



## Weekly Review

Now that the bituminous coal strike is over, and reports of the United Mine Workers show that nearly 90 per cent of the miners have reported for work, it is expected that the production will soon be normal. The United States Geological Survey's report show that during the fifth week of the strike the production was only 43.5 per cent of normal, which was not as large as that of the week previous, for comparatively few of the striking miners accepted the 14 per cent increase and returned to work. In addition many mines which had resumed operations during the Washington Conference again shut down, notably in Wyoming, West Virginia and the Cumberland—Piedmont Field.

The Railroad Administration having had several days warning of the possible ending of the strikes, aimed to better conditions in the West, and to relieve the shortage there by sending empties as quickly as possible for use in the Indiana and Illinois mines. Recently the acute shortage of coal in the Middle West was relieved slightly by the moving of coal by Lake to the west bank of Lake Michigan. Coal is now not available from this source as the Lake season came virtually to an end, after a week of extreme cold weather ending Dec. 1. These mid-western states will first be taken care of before the conservation regulations need be lifted. Complaints of car shortage were few in number and these shortages resulted rather from the weather than from a lack of empties at the mines.

The supply of coal received from the nonunion mines and from the union mines that are now in operation especially in the Central Competitive Fields, is being distributed through local distributing committees, largely to railroads, public service utilities and other essentials.

Non-essential industries are in many cases being refused permits granting them the right to receive coal. Reports just received state that these regional directors, having authority from the Fuel Administration, have modified restrictions passed upon their local communities. Train service is to be restored here in the East and in some western sections. Exporters have received word that at Hampton Roads certain sizes of coal may be bunkered by permit, thus allowing them to fill their long delayed contracts.

Canada heard the news of the end of the strike with great relief. Fairly good supplies had been coming in right along but since Nov. 1, the first day of the strike, the supply of bituminous coal had been cut down greatly.

On Monday the first new bituminous coal arrived in the market, the supply coming from mines in Pennsylvania, Ohio and smaller supplies from Indiana and Illinois. The movement becomes heavier but it will take sometime, perhaps two or three weeks before all of the demand can be adequately supplied.

Colder weather and a rapid increase in the supply caused the consumers to make pressing demands. However, the transactions have not been many, but it is expected that next week will bring with it better prospects. The prices of anthracite have remained unchanged while the government prices on bituminous still continue. Steam sizes of Anthracite moved in large quantities to points West and into Canada, and buckwheat and rice, though hard to get, are constantly in demand.

Conservation must still be continued, even after immediate needs have been met with, but it is the belief of many that the restrictions all over the country will soon be lifted.

### WEEKLY PRODUCTION

The estimated production of coke during the week ended Saturday, December 13, was 191,000 tons, contributed by the two districts as follows: Connellsville, 114,480, a decrease of 50,430 tons; Lower Connellsville, 77,170, a decrease of 20,780 tons, making a total decrease of 71,210 tons, or 27 per cent. from the week preceding.

By interests the production was: Furnace 116,300, a decrease of 48,910 tons; merchant 75,300, a decrease of 22,300 tons.

There was a net gain of 120 in the number of active ovens, 201 having been fired up at the merchant plants and 81 blown out at furnace plants.

### Atlantic Seaboard

#### BOSTON

Situation clearing. Volume shipments to New England all-rail looked for this week. Much interest in way export coal is to be handled. Hampton Roads shipments coast-

wise resumed under permit. Little real anxiety over supply. Demand for steam sizes anthracite slumps completely. Anthracite comes forward with about normal regularity.

Bituminous—While New England was relieved to learn that mining was resumed, the situation has at no time been the subject of the same kind of apprehension that was justified in other sections of the country. Representative members of the trade have not shared the alarmist reports circulated by persons not at all conversant with this year's business. Too much reliance has been placed upon those consumers who seldom buy liberally except on scare, and too much stress has been laid upon comparisons with 1918, a year in which tonnage figures were never so misleading to the uninformed. As a case in point the Port of Providence, R. I., shows a decrease in receipts by water for the period Apr. 1-Dec. 1, 1919 of 800,000 tons! But what of it? 50 per cent. is accounted for by the deliberate choice of the railroads to haul all-rail the heaviest proportion possible of their supply coal, the cost being so much less than by water. The other 50 per cent. is accounted for by one word—"Oil!" The trade knows that is comfortably supplied for the present, and if there is no further interference with car supply and normal ship-

ments are for the most part allowed to come forward unhindered there will be fuel sufficient for all requirements.

Steam-users are confident that coal will be routed this way in good volume the current week. Reports at this writing are very favorable. About one-half of the 4000 cars that have been held under load for periods from two to six weeks are being released, and we have yet to hear of any genuine case of distress that could not be relieved locally. Anxiety there has been on the part of distributors and re-handlers to make sales, but aside from that there has been calm and quiet everywhere except among re-constituted fuel administrators. The Massachusetts Commission on the Necessaries of Life which through the season has done some really efficient work, has not courted publicity.

The agencies are much interested in what is to be done presently in the way of loading coal for export. Some expensive detention charges have accrued at all the loading ports and it is hard to see why the coal should not be released. Some announcement is hoped for this present week. A large proportion of the output will move on contracts made prior to Oct. 30, in any case, and price regulations now in effect will not have much influence upon the flow of coal.

At Hampton Roads an average fleet for New England has loaded Dec. 13 and 15. Permits now are being freely granted and practically every requirement is within the priorities. One limitation on the number of bottoms that can load is the fact that at this end the district sub-committee is inclined to be sparing about issuing permits to re-handlers who have their storage space stuffed with coal, and one result will be a decreased tonnage for New England steam users for those who want the same committee is so solicitous.

In our judgment there is little real anxiety over supply in this territory. The prompt action of the Regional Director in cancelling all restrictions was commended and it is felt that with a week's output coming forward, the situation will be rapidly straightened out. The far-seeing buyers who have been seeking wood and other substitutes for plants which have on hand supplies to Mar. 15 will now breathe a heavy sigh of relief.

**Anthracite**—Certainly the bottom has completely dropped out of the market for steam sizes of anthracite. For a day or two there was brisk demand, chiefly from buyers whose immediate supplies were ample and who, besides, had coal on cars at destination, but withheld by the authorities. The latter supported the market for buckwheat, rice, and barley nobly while they could. There are many who regret their early demise.

Domestic sizes are coming forward both all-rail and by water with fair regularity. Store is somewhat easier, but supplies of chestnut are still behind the demand. Egg is fast getting to be a drag, and now that pea is less in current demand because of the bituminous settlement there is likely again to be a surplus of that size.

Barges are moving about as normal for the season and with another month most of the out-of-the-way points usually supplied in this way will have received their usual tonnage.

#### NEW YORK

Demand for the Anthracite steam coals drop with the ending of the bituminous strike but prices remain steady. Lighting and heating restrictions are generally removed but public is cautioned against extravagant use of coal. Normal conditions not to be expected for several weeks. Domestic coals wanted by the dealers.

**Anthracite**—The steam sizes occupied the center of the stage last week. The greatest activity in the trade centered about them and while there was a good response from consumers it was not as heavy as the operators and shippers looked for. During the final week of the bituminous strike middle houses handling buckwheat and the smaller sizes had a demand which went a long way toward cleaning up some of the heavy storage piles and which called for shipments as fast as the coal could be picked up. As soon as the strike had been called off and the men ordered to return to the mines, this demand eased a little and there still remains in storage considerable of the smaller coals.

When it is considered that we are now in the middle of December, one of the best coal burning months, the demand for the domestic coals is not as strong as it should be. While there is a good call especially for stove and chestnut, there is plenty coming to this market to satisfy everybody and there are no signs of suffering.

Shippers report a good demand from inland points where any of the larger sizes are desired. With Lake navigation at almost a standstill much coal is being diverted in other directions, principally to the West and New England.

Pea coal moves steadily both here and along the line. The demand for buckwheat, rice and barley is steady, although lighter than last week. The placing of restrictions by the Fuel Administration brought forth many protests by the trade who contended that there was sufficient small coal in storage and within easy shipment of this city to meet all requirements.

During the 8 days ended Dec. 12 there were 6132 cars of anthracite dumped at the local terminals as compared with 4307 cars the previous 6 days.

Current quotations, for company coal per gross tons, f. o. b. Tidewater, at the lower ports are as follows:

Circular		Circular	
Broken . . . . .	\$7.80	Pea . . . . .	\$7.05
Egg . . . . .	8.20	Buckwheat . . .	5.15
Stove . . . . .	8.45	Rice . . . . .	4.50
Chestnut . . . .	8.55	Barley . . . . .	4.00
		Boiler . . . . .	4.25

Quotations for domestic coals at the upper ports are generally 5c higher on account of the difference in freight rates.

**Bituminous**—Although the strike is ended and the restrictions on lighting and heating

generally removed, it will be several weeks before normal trade conditions again exist. There was no general resumption of work at the mines until Monday of this week (Dec. 15) and shippers did not expect there would be anything like normal receipts of coal at Tidewater until a week later. Then follows the holiday period—Christmas and New Years both falling on Thursday—with many workers remaining away from their work the balance of each week. With this interruption many tradesmen predict it will be well into the new year before coal will be moving freely.

The many restrictions ordered by the various government agencies reduced the movement of coal to a minimum at this Tidewater and unless consumers could show good reasons they received little or no coal. Public service corporations were kept down to the smallest possible daily deliveries but, because of the heavy reserve stocks they had fortified themselves with, did not seriously feel the effect of the five weeks suspension.

Large consumers did not begin to show any nervousness over the situation until about a week before the strike ended. Seeing their coal supply dwindling away, most of them started to lay in a supply of the anthracite steam coals which they intend to mix with bituminous.

As soon as it was announced that the mine workers had been ordered back to the mines wholesalers began to receive orders and already many shippers have their product sold several weeks ahead.

Dealers who make a specialty of bunkering vessels and who believed they had found way out of their difficulty by using the anthracite steam sizes received a jolt when the Central Coal Committee issued an order that it would not be permissible to deliver the small sizes for bunkering and that those coals would be placed on the same basis as bituminous when intended for that purpose.

One result of the strike has been the study made by officials of some of the traction and lighting companies into the possibilities of substituting oil for coal. The one drawback however is the restrictions against the storing of oil in sufficient quantities. Many of the large buildings in New York are either experimenting or have permanently changed their coal burners into oil burners.

There were 3322 cars of coal dumped at the local railroad terminals during the 8 days ended Dec. 12 as compared with 3015 cars the previous 6 days, an increase of 307 cars. The reports of the Railroad Administration show that on Dec. 12 there were 3669 loaded cars at the various terminals.

Under the orders of the Fuel Administration the maximum prices at the mine for coal handled at this Tidewater are:—

	Mine Run	Prepared	Slack
Central Pennsylvania	\$2.95	\$2.95	\$2.95
Western Pennsylvania	2.35	2.60	2.35
Fairmont . . . . .	2.50	2.75	2.25
George's Creek, Upper Cumberland and Piedmont Fields . . . . .	2.75	3.00	2.50

#### PHILADELPHIA

**Anthracite market brisk.** Retail buyers ease off some, but current demand is strong. Stove and nut still to the fore. Egg fairly plentiful. Pea movement lively. Some dealers look for a let-up in mid-season. Shipments moderate. Steam sizes in good position, except barley. Bituminous still short despite strike's end. Regulations being removed, except price. Stocks still short. Little coal expected in spot market for month.

**Anthracite**—With seasonable weather prevailing the consumers demand for coal continues strong. This naturally has its reflex upon the shippers, who continue to be well behind in their shipments of the favorite sizes. There has been something taken off the edge of the retail buying due to the ending of the soft coal strike, as the people now feel that everything is once more all right. The retailer is not so sure, especially, he who makes a study of the situation. As it now stands the bituminous men who had been working practically under the same agreement as the hard coal men, are now to get an increase in salary, while his fellow miner in the hard coal region works at the old scale. This it is pointed out opens the way for trouble and even now some murmurings have been heard. It is just possible that a reconsideration of the anthracite scale can be withheld until April, but it is certain then to be opened up.

All dealers still press their shippers for stove and nut coal, as the bulk of the current business received by the former calls for those two sizes. The retail men continue to urge the use of pea coal by advertising this size for sale, and some little tonnage continues to be substituted, but in the main the consumers hold out for their favorite sizes. As to egg coal the situation seems to have

been met, as some of the larger retailers are advertising this size for prompt delivery along with pea. The demand for this latter size continues to gain momentum from the regular users and the weather has been such as to send a flood of orders for half ton lots into the dealers, which is the sure barometer indicating the pea coal season is now on. The individual shippers are most all asking 75 cents per ton above company circular on pea, although a few of the smaller shippers are understood to be shading this premium a little to their preferred trade.

As to shipments into the city recently, it must be said that the demand of the public is being met, even if every dealer is not getting exactly the tonnage that he desires. Even now the dealers are finding out that orders which they have been carrying on the books for months, partially filled, have been completed by other dealers, which in itself is a sure indication of the well-filled condition of the cellars, and should the shipments be increased 30 to 40 per cent, there may be a surplus of even the favorite sizes.

The local dealers have for some time been in competition with various kinds of fuel, such as oil and coke. Early in the fall in one of the suburban communities an extensive campaign was in progress introducing an oil burning device for domestic ranges and heaters. Hundreds of families adopted them and during the mild weather of early fall they expressed the utmost satisfaction with their use. Now with the coming of colder weather the turn has come and the device is now being taken out about as fast as it was put in, as it is unable to stand up against present weather conditions. With coke, there has been an increasing number of brands introduced and while some considerable tonnage has been placed it has not been enough to affect the retail trade, and if it were not for the dearth of the favorite family sizes of anthracite it is believed the producers of coke would be hard put to find an outlet. One kind of coke in particular, manufactured locally, has been extensively advertised as "nut" size, but is in reality only the size of anthracite pea, but the price charged for a net ton is but 25 or 30c less than anthracite nut. The producers of coke have made extra efforts to have dealers generally handle their product, but only a small number have given orders for it.

The steam sizes are in good demand. Buckwheat is quickly taken up, and most shippers are experiencing some little delay in meeting their orders. Rice is also fairly brisk, although there has been a perceptible slowing down in this size during the last five or six days, which is directly traceable to the soft coal mines resuming operations. Most of the activity in this size had come from western sources, and much of this business is now easing off. Barley sales remain very quiet, with very little prospect of an early rise.

**Bituminous**—Despite the fact that the miners were supposed to have returned to work last Thursday, there has been much delay in their doing so, and they really did not come out in any number until the beginning of the week, preferring to finish out the balance of the previous week in idleness.

All fuel is still being distributed through the fuel authorities, although most of the restrictions on railroads and manufacturing plants have been taken off. Until the fresh-mined coal comes on the market fuel will continue short and most of it is still being held in reserve for the railroads and the essential industrial plants. Due to the depletion of stocks it is thought that it will take more than a month until the market shows signs of getting caught up and it is believed that there will be little coal of the better grades for sale during that period. In the meantime some shippers are offering coal of ordinary grade for sale at the Government price of \$2.95, but in no way guaranteeing delivery, merely stating that they will be able to make consignment from the mine.

#### BALTIMORE

Maryland district and immediate territory working about 30 per cent. Isolated troubles are cleared away. Tonnage movement in regional district more than two-thirds or ordinary normal. Hard coal supply tight.

**Bituminous**—The coal trade and business world is slowly readjusting after the last chapter of the big fuel strike. The first steps are toward tonnage in badly needed places, and the fact that the mines of the Georges Creek region and of the portion of the Upper Potomac region in and adjacent to Maryland are now producing around 90 per cent, is encouraging. The railroad administration officials state that the loading on the entire division has passed two-thirds of normal. The first day of the present week the total loading on the division reached



nearly 2700 cars, and this has been increased several hundred per day since that time. Of the number of mines probably 96 or 97 per cent. are working. A few mines, especially of one company in Maryland, failed to open last Monday owing to labor disputes over the re-employment of certain men, and the union question was dragged in. All this is since reported straightened out.

There is at present only about 100 cars of coal at Curtis Bay, and very few more at Canton, while the incoming tonnage of the moment for the piers and the number of cars at Brunswick consigned to the piers does not give promise of early increase of material character. Most of the coal coming in is all-rail for plants selected for emergency supply by the fuel distribution officials. In connection with the scarcity the Governor of Maryland has issued a warning to consumers that the end of the strike does not mean the end of the serious fuel shortage. All plants are advised by the governor to consult R. P. MacKenzie of the Regional Coal Committee concerning their needs in order to have an equitable distribution.

**Anthracite.**—The hard coal supply is truly tight. Real cold weather has caused a number of consumers who had taken on but a light supply to start the winter to go after more coal. The dealers are using care in distribution, as receipts are exceptionally light, especially of the popular household sizes. There is no real trouble so far, but a long cold spell might bring about another story.

## Lake Markets

### PITTSBURGH

Men resuming work, local union officials encouraging them. Domestic supplies satisfactory. Market stagnant.

On the second day after the Indianapolis settlement reports are that about 10,000 coal mine workers have returned to work in the Pittsburgh district. Local officials of the United Mine Workers appear to be doing all they can to get the men back to work promptly.

The local committee of the Railroad Administration on coal distribution is understood to be in favor of reducing the restrictions on coal consumption, particularly in connection with the lighting of retail stores. The limitations as to coal consumption by factories, including steel mills, are likely to be kept on for some time, but the regulations are not interpreted as interfering with a mill consuming its own stocks of coal if it has any left. Few steel plants in the Pittsburgh district have had to close this week on account of coal shortage, but Ohio districts are more seriously affected, and there will probably be more closings next week.

If the coal is available, the distribution authorities will allow it to go to by-product coke ovens to the extent of permitting them a 50 per cent. operation, by coking 30 hours instead of the usual time, about 15 hours. Distribution of coal for domestic and other retail use is still good on account of the stocks of river coal accumulated in coal boats and barges, this accumulation being a seasonal one, although it was accentuated somewhat by prospects of a strike.

The coal market has been almost absolutely stagnant since the price restriction was reimposed, but there are occasional transactions, and there are prospects for greater activity next week. The market is quotable at the Government limit, with 15c brokerage, mine-run \$2.35@2.50, screened, \$2.60@2.50, screened, \$2.60@2.70 per net ton at mine, Pittsburgh district.

### CLEVELAND

Daily receipts of bituminous coal through the local coal committee are large enough to permit the release of some to plants not on the preferred list. Anthracite receipts are irregular, and about 20 per cent. of normal. Only an occasional car of mine-run Pocahontas is being received by Cleveland dealers.

**Bituminous.**—After providing for utilities, retail dealers and the so-called essential industries the local coal committee has found it has a small surplus, which it is dividing among the so-called nonessential industries. This indicates that the coal situation locally is much improved. Fairly strict observance of the Fuel Administration's regulations on office building light and heating is reported, while the ban on outdoor advertising and lighting is being followed to the letter.

By far the larger part of the Cleveland industries are operating normally or there-

abouts. Blast furnace plants are harder hit for coke than for coal. Practically all brick, tile and similar plants are down tight, and do not hope to resume until after Jan. 1. A score of plants have shut down for the holiday period, having moved inventory time up to cover the same gap as the coal shortage. At the most, not more than 10,000 persons actually have been denied employment by reason of the fuel shortage, though many more thousands have had their workday shortened.

Retail coal dealers do not expect to get near normal shipments before Dec. 25. Meanwhile, they are not quoting on bituminous coal. The government schedule is not far removed from the last-quoted prices, but some bituminous being received goes as high as \$2 above this level. Coal ordered the latter part of October by steam-coal users, willing to pay any price to get their orders on operators' books, is coming through—confiscated, of course—by the railroad administration—and dealers do not know the exact price until the car is in their yards. The market for bituminous coal may be said not to exist at present, as the local coal committee dominates the situation. Pocahontas, mine-run sells for \$7.40.

**Anthracite.**—The dealers consider themselves lucky if they get four or five cars for a week just now. The first part of last week anthracite came through in good shape, but lately receipts have tapered away off. The promise is held that within a week shipments will again approximate normal. Anthracite prices remain unchanged at \$11.75 to \$11.90 for grate and egg sizes, \$12 to \$12.20 for chestnut, and \$11.90 to \$12.10 for stove. One retail dealer is selling coke for as low as \$11.20; another is reported getting \$15. Considerable coke is being sold for domestic purposes.

**Lake Trade.**—The last upbound cargo of coal for the head of the Great Lakes left Buffalo the morning of Dec. 12. Anthracite was taken, at a rate of \$1 a ton to Milwaukee. It is estimated that in the 1919 season bituminous coal dumped at Lake Erie ports, including vessel fuel, will not have exceeded 23,500,000 tons, against approximately 29,800,000 tons in the 1918 season.

### DETROIT

Efforts of jobbers and wholesalers are directed toward restoration of shipments to a regular basis.

**Bituminous.**—While consumers are waiting hopefully, jobbers and wholesalers in Detroit are working to get their sources of supply re-opened and re-established the movement of shipments into Detroit in as short an interval as possible. With all restrictions on use of light, power and heat removed by the federal and municipal authorities and the miners returning to work, there seems only the weather and the railroads as the factors of uncertainty.

Bituminous coal is coming into Detroit in rather small volume but with favorable weather and the discontinuance of confiscation of shipments, it is believed there will be no necessity of placing further limitations on operation of Detroit industries. It is likely to be several weeks, however, before the disorganization created by closing of factories will have been overcome.

The unsatisfactory results of the policy of hand to mouth buying that has been characteristic of some of Detroit's large users of steam coal in the past, in the opinion of jobbers has been conclusively demonstrated by the difficulties experienced in recent weeks. The jobbers will endeavor to impress on these buyers the wisdom of taking thought for the future by placing orders early and building up reserves of sufficient magnitude to make sure fuel will be available to keep plants running for a reasonable time.

**Anthracite.**—Very cold weather with temperature near zero has brought an urgent demand for prepared sizes of anthracite. The supply in retailers' yard is small and in some cases it is necessary to limit distribution to one ton or a half ton. Shipments are slow in coming through the dealers say, though the hope is expressed that discontinuance of lake shipments may bring some improvement.

**Lake Trade.**—Considerable difficulty was encountered by the three lake freighters carrying the season's last coal cargoes, in working their way through the ice which formed rapidly in the connecting rivers. All navigation aids having been removed navigation at night was impracticable except in the open lake.

### BUFFALO

Anthracite becoming plenty. Lake trade closes late. Bituminous much unsettled. More coal moving. Prices not stable. Nobody knows what to expect.

**Bituminous.**—More business now, but of a decidedly uncertain sort, with prices as

before, if any are made. Many jobbers do not know what to ask. They say that if coal becomes plenty they are going to have a hard time in holding the prices, but if consumption continues to exceed production, prices must go up. It is too early to say which will happen.

Pittsburgh is beginning to ship coal to jobbers again, notices of cars sent out have been received and more are promised. So much of the reserve held in cars has been released that the situation is much improved. If there is no further hitch the trade will soon be back to normal. The jobbers have a great task before them in getting coal moving again. The machinery has been kept up as well as it could be, but there are many things to get back into line yet.

It is expected that the car supply will be one of the chief difficulties. Other branches of business are complaining of fast-growing shortage, and this will, of course extend to coal as soon as it is moving at an ordinary rate. Reports from the mines are that the men are a little slow in getting back to work, and they are not always in condition to do a full day's work, so that not more than half the normal output has been reached yet. The holidays are not far off and they will interfere with work, so that it is likely to be well into January before the supply can be depended on.

In the meantime it is found that the consumers are not in any hurry to buy. They had plenty of coal as a rule all along. It was only the few small consumers with insufficient storage who were running out of a supply. The others are in good shape, hardly any plants in this vicinity had to shut down from coal shortage. Canada is not buying bituminous at all freely, though it is stated by shippers from there that the supply is becoming quite small in some sections.

**Anthracite.**—The situation is becoming much easier in the city, as the companies are keeping their promises and turning the current of coal that was flowing to the lakes into the city trestles. Already there is an end practically of the complaint of shortage and that means that nobody will order more than is needed and it is all easy.

Much complaint is heard of the refusal of our banks to accept Canadian securities and money at par. Sometimes the discount is 12 per cent. It is said that the reason for this is that British gold no longer comes in at New York to meet Canadian excess purchases. Buffalo feels the loss of trade and also misses the Canadian silver currency, which used to be so plenty here. The smallpox scare, that occasioned a quarantine against Canada, is another source of difficulty, both to the coal man and to the shipping trade.

The lake season is over with total shipments 4,156,118 net tons, as against 3,594,803 in 1918 and 4,237,904 tons in 1917.

The amount shipped last season is probably sufficient for the needs of at least an ordinary winter. So far the winter is proving much more than usually severe.

Following are the prices quoted for coal to the Buffalo retailer or consumer, anthracite being as specified, with \$1 to \$2 premium for independent, and bituminous being f. o. b. per net ton delivered on cars:

	Anthracite	
	On Cars Gross Ton	At Curb Net Ton
Grate .....	\$8.55	\$10.20
Egg .....	8.80	10.65
Stove .....	9.00	10.85
Chestnut .....	9.10	10.95
Pea .....	7.45	9.30
Buckwheat .....	5.10	7.75
<b>Bituminous</b>		
	Allegheny Valley	Pittsburgh or No. 8
All Sizes .....	\$4.55	
Lump .....		\$4.80
Three-quarter .....		4.65
Mine Run .....		4.20
Slack .....	4.10	4.10

### Coke

**Buffalo.**—The demand for coke by the furnace companies is still light, but it ought to improve before long, as the operations return to normal after the strike. Jobbers do not sell great amounts of it here, as much is bought from producers, but they report a small demand at \$9 for 72-hour Connellsville foundry, \$8 for 48-hour furnace, \$7 for off grades, \$7.75 for domestic sizes and \$5 for breeze. Iron ore receipts by lake kept up till the end of the regular season and were large, in spite of labor and other difficulties.

## CINCINNATI

**Situation unchanged. No car shortage. Bright prospects as to future deliveries.**

Developments of little consequence were felt in the local coal market last week. Practically all coal arriving here is being confiscated at the scales by the Fuel Administration. The bulk of the output of the non-union mines at West Virginia and Kentucky which heretofore came to Cincinnati is now being diverted to other sources, principally the North and Northwest. The production of these mines, according to reports, is 75 per cent. of normal. The diversion of the coal from the nonunion fields is sort of a hardship on the local dealers, who have been receiving the bulk of their supply from these mines, since the strike was declared.

While the reserve coal in the Ohio-Indiana district dropped to 1500 cars last week more than 60 cars of coal were received in Cincinnati proper, Dec. 13, for distribution to industrial plants and public utilities. This is one of the largest shipments received locally since the strike began, and is part of the 1200 cars of bituminous coal promised by Washington fuel authorities. Rumors during the past week of a coal car shortage at the mines were not taken seriously by coal men, who say most of the mines have enough cars now at their doors to last for several days.

R. A. Colter, chairman of the Coal Exchange, said it would be a week of ten days before the real beneficial effects of the ending of the strike will be felt directly through receipt of coal. Cincinnati market has always received the bulk of its coal from West Virginia, where many mines did not shut down. Therefore the first effects of the ending of the strike will be an increase in the flow of coal to Cincinnati, through stoppage of diversion of coal billed here to supply other places.

F. E. Harkness, counsel for the Fuel Administration, said that prices of coal contracted for by purchasers prior to the resumption of government price-fixing could be legally raised to about the cost of 14 per cent. increase in miners' wages, granted under the strike settlement. Coal mined on contract in many cases sold for a price below the government maximum of \$2.35 per ton, mine-run, and contracts ordinarily carried a clause binding the purchasers to pay additions in labor costs incurred after their making.

Wholesalers and retailers alike did very little business last week. The local situation was practically handled by the Fuel Administration. Local coal men have been assured 50 cars of coal a day beginning Dec. 15. This they say will greatly help the situation until the coal begins to flow in from the mines where the miners have been on a strike. Several manufacturing plants have been running full capacity by mixing with what coal they have, anthracite slack, which can be had in unlimited quantities at comparatively low prices. Coal receipts from barges coming down the Ohio River were far below normal last week. Retailers are taking all the coal they can obtain, but with production far below normal at the mines, old orders and contracts are taking up all the supplies with little coal for new business. Now that the coal strike is settled, a decided improvement in the local market is expected within the next two weeks.

## LOUISVILLE

**Colder weather creating better domestic demand. General situation unchanged.**

Retail demand has been increased somewhat by near zero weather. The domestic demand, as a whole, is light, due to the fact that Louisville is well stocked. Buying is largely on the part of farmers, peddlers, etc. Retailers are unable to meet with the demand. A large retail owner of a number of yards reported all yards empty but one, and that yard contained only a half day's supply.

Jobbers report that conditions are a little easier for them, for they are managing to get orders through for customers, especially for essential industries.

Manufacturing plants are still on a 48 hour basis south of the Ohio River, and reports indicate that they may be placed on a three day per week basis shortly. Stores are remaining on a seven hour basis.

The situation at the mines is probably as bad, if not worse than it was last week, due to the fact that miners are very erratic. They work for short periods and then walk out again. In some sections miners are demanding recognition of their unions, thus

causing trouble, as employers fail to comply to their demands.

In Clay County operations are at normal, and in Hazard fields production is good, with car supply better. The Elkhorn field is getting on its feet.

However, it is pointed out that there is hardly a mine in the state which has modern facilities that can work coal fast enough to make any money on such a basis unless they get an increase in sale price. Very few could make any money on a fourteen per cent. increase, while many are losing money on the old schedule, where they haven't facilities.

## BIRMINGHAM

**General conditions bettered. Restrictions lifted. Stocks are low. Rain cripples output.**

With all restrictions as to the movement of coal removed by the government officials, the general conditions affecting the coal industry here have been very much bettered. Railroads are under instructions now to allow all coal mined on their lines to proceed to the consignee as billed, which will result in an early replenishment in the stocks of consumers in Alabama territory. Production on the lines of the Frisco has been diverted for western territory for several weeks past—both domestic and steam—which has taken considerable tonnage out of the district to foreign consumers.

Notwithstanding the restrictions placed on deliveries of coal, industry in the regular trade territory of this district has not been seriously crippled and inquiry for steam coal has not been insistent during the strike period, for under government control only users in the priority class could be supplied. Vessels which bunkered at the ports of New Orleans and Mobile have perhaps felt the shortage more keenly than any other class of consumers, as shipments down the Warrior river to these points has also been tied up under the restrictions, which were lifted several days ago. A strong demand for steam coal is expected to materialize from the general trade, and the movement will be exceedingly heavy from now on.

Domestic supply is short everywhere and there will also be a strong call for this grade of coal. Stocks are low and main consumers have not laid in any winter supply, which augurs a good, steady demand from householders when normal winter weather sets in.

The output of coal in the Alabama field is practically normal and the few remaining mine workers who have held out on strike are returning to work, the mines in the Cahama field having resumed operation, which will relieve the domestic situation considerably. The tonnage for the week ending Dec. 6th, was slightly under the previous period due to unfavorable mining conditions. Rains have crippled the output the present week.

## Coke

## CONNELLVILLE

**Beehive coke production limited to 50 per cent. of November rate. By-product output 50 per cent. or less. Blast furnaces banking. Government price limits in force.**

Shortly after the order was issued by the Fuel Administration curtailing beehive coke production by 25 per cent., a second order was issued, restricting the charging of coal to beehive ovens to amounts not in excess of 50 per cent. of the average amounts charged during the month of November. This would cut the Connellsville and Lower Connellsville region down to a coke production of about 120,000 net tons a week, and the regulation is made effective by withholding coke car supplies. An ample supply of cars is reported for loading coal.

By an order decided upon Dec. 8 the old Government price limits on coke are reimposed, the limits in the case of Connellsville being \$6 for furnace and \$7 for selected 72-hour foundry, per net ton at ovens. For a few days preceding there had been a wild spot market, reports being that furnace coke sold at as high as \$12 and foundry coke at as high as \$15. Very small lots were involved as offerings were quite limited. There was a sale of 35 carloads at \$9.25, and this may have been the largest transaction after the market had gotten entirely out of bounds.

A few blast furnaces are already banked and many more will have to bank, as the furnaces do not generally feel a restriction in output until after the lapse of a week or two. As regards by-product ovens, the fuel distribu-

tors will allow them coal, if available, sufficient to enable them to operate at 50 per cent., but it is not certain that enough coal can be found, and the stocks at by-product ovens are down to a very low point.

The market is quotable at Government limits, \$6 for furnace and \$7 for foundry, per net ton at ovens.

The "Courier" reports production in the Connellsville and Lower Connellsville region in the week ended Dec. 6 at 262,610 tons, an increase of 25,355 tons.

## Middle West

## MILWAUKEE

**Last cargo of the season from the lower lakes received. Hard coal being drawn upon for power purposes.**

Milwaukee has received her last cargo of coal by lake for the season of 1919. The close was in a way sensational as the coal strike called for every effort to forward fuel to the West for vessels sailed in zero weather and took every hazard to deliver their cargoes. Ten or more large cargoes reached port during the last week of the season. Soft coal has been moving to the interior at the rate of about 15,000 tons daily, and some industries which were deprived of their full requirements, have been cutting into the stock of anthracite to an alarming extent. If this drain is not stopped legitimate consumers of anthracite are apt to suffer before the winter is over.

As far as can be learned there is no profiteering in fuel in Milwaukee. Dealers are doing all they can to supply their consumers and at the same time comply with the Fuel Administrations restrictions. Coke is in good supply. Unofficial figures make the bulk cargo coal receipts for 1919, 969,752 tons of anthracite and 3,011,536 tons of soft coal as against 839,092 tons of the former and 3,446,061 tons of the latter in 1918.

## ST. LOUIS

**Conditions good in St. Louis territory. Miners back at work and a little coal rolling in. Some dissatisfaction among miners, but prospects look reasonably good.**

The local situation, everything considered, is exceptionally good. Between 3,000 and 4,000 cars of smokeless and Kentucky coal were in transit to St. Louis when the strike was called off and it is understood that the railroads, for the most part, will absorb this.

A little coal was taken out on the 12th, perhaps one-tenth of the tonnage of the entire field in the Standard and Mt. Olive fields because coal had to be shot down. On the 13th the tonnage was perhaps one-fourth of the field.

With the beginning of the week the prospects are good for a heavy tonnage, for cars are plentiful. In the Mt. Olive and Standard fields there is some little dissatisfaction here and there, but this will be eliminated in a few days and all miners will be at work.

Some of the single miners have left the fields for the manufacturing centers and a number of the foreigners have gone back to Europe. Several hundred miners of Illinois are known to have gone to the oil fields in the southwest where labor is steady and wages are good.

In the Cartersville field up to the end of the week there was very little prospect of work being resumed on a large scale, many of the miners having voted to stay out. In the Duquoin field, however, they were rapidly going back to work. Regional Director Ashton of Chicago made a ruling that will help St. Louis and the western and southwestern country considerably. The mines producing coal on the Missouri Pacific, Chicago, Burlington & Quincy, Illinois Central, Chicago & Eastern Illinois and Wabash R. R. must not ship any coal into Chicago or the switching limits thereof or through that gateway, thus forcing that coal into the southern and western markets, because Chicago had a large tonnage of smokeless coal in transit.

Government prices prevail on all coal, \$2.55 \$2.05 on screenings, with fifteen cents at tached for the jobber.

A few thousand tons of anthracite buckwheat and pea sizes have come in here for steam purposes, the first time in history that this coal has been used for steam in St. Louis.

There is still a good tonnage of gas house coke moving both locally and out of town, and the same applies in a much larger measure to by-product sizes.



1. **Product**  
 2. **Price**  
 3. **Place**  
 4. **Promotion**  
 5. **People**  
 6. **Process**  
 7. **Physical Evidence**  
 8. **Performance**  
 9. **Partners**  
 10. **Power**  
 11. **Procedures**  
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